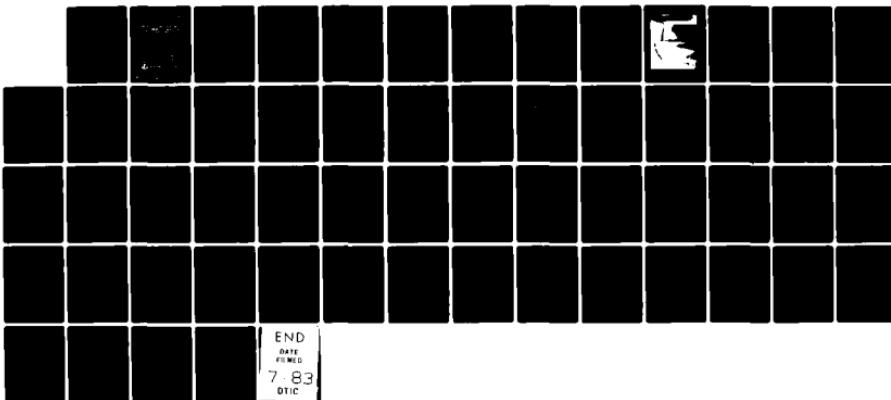
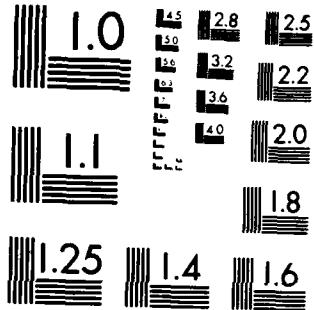


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LASER DOPPLER VELOCIMETER MEASUREMENTS OF THE TWO-DIMENSIONAL BOUNDARY LAYERS ON A PROJECTILE SHAPE AT MACH 3

BY JEFFREY L. GORNEY WILLIAM J. YANTA DONALD W. AUSHERMAN
STRATEGIC SYSTEMS DEPARTMENT

SEPTEMBER 1982

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20. ABSTRACT (Continue on reverse side if necessary and identify by block number) Two-dimensional boundary layer velocity profiles, as well as pressure distributions, turbulence intensities, and Reynolds stresses were measured on a six-caliber secant-ogive model for angles of attack of 0° , $+2^\circ$. Test conditions were a Reynolds number of $2.7 \times 10^6/\text{ft}$, Mach number of 3.02, and a P_0 of 20 psia.		
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FOREWORD

An extensive data base on a six-caliber secant-ogive cylinder model with two different rotating band configurations was generated in the NSWC/WO Supersonic Tunnel #2 at Mach 3.02. Pressure and Laser Doppler Velocimeter (LDV) data were collected at four axial stations, at three angles-of-attack (0° , $\pm 2^\circ$), with and without the rotating bands. Spark shadowgraph photography was also obtained.

The authors would like to express their appreciation to the program sponsor, Dr. Walter Sturek, and the test monitor, Lyle Kayser, of the U.S. Army Ballistics Research Laboratory. The technical expertise demonstrated by NSWC personnel - Mary Ellen Falusi, Steven Cothran, and Robert Marshall, was also deeply appreciated.

Approved by:

C. A. FISHER, Head
Weapon Dynamics Division

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INTRODUCTION

This paper summarizes the results of a test performed in the Naval Surface Weapons Center/White Oak (NSWC/WO) Supersonic Wind Tunnel #2 on a six-caliber secant-ogive cylinder with two rotating band configurations.

The objective of this wind tunnel test was to provide a pressure and boundary layer profile data base for use in validating flowfield prediction codes for projectiles at small angles-of-attack. In particular, data were obtained which would allow for an evaluation of the effects of rotating band configurations on projectile aerodynamics.

The approach taken in the test was to measure the local wall pressures at thirteen axial locations near the rotating band, and to use a 2-D Laser Doppler Velocimeter (LDV) to measure velocity profiles at four axial stations. These tests were conducted under the sponsorship of the U.S. Army Ballistics Research Laboratory (BRL).

TEST FACILITY AND CONDITIONS

This test was conducted in the NSWC Supersonic Tunnel #2, a 16-inch x 16-inch cross-section, horizontal tunnel capable of operating over a Mach number range from 0.3 to 5.02, with a supply pressure ranging from 0.5 to 15 atmospheres. The tunnel working medium is high pressure air. Two modes of operation are available: (1) a blow-down mode from an air storage system; or (2) a continuous "recirculating" mode.

For this test, the continuous mode was used, with a Mach number of 3.02 and a Reynolds number of approximately $2.7 \times 10^6/\text{ft}$. The nominal supply pressure and temperature were 20 psia and 130°F, respectively.

MODEL AND INSTRUMENTATION

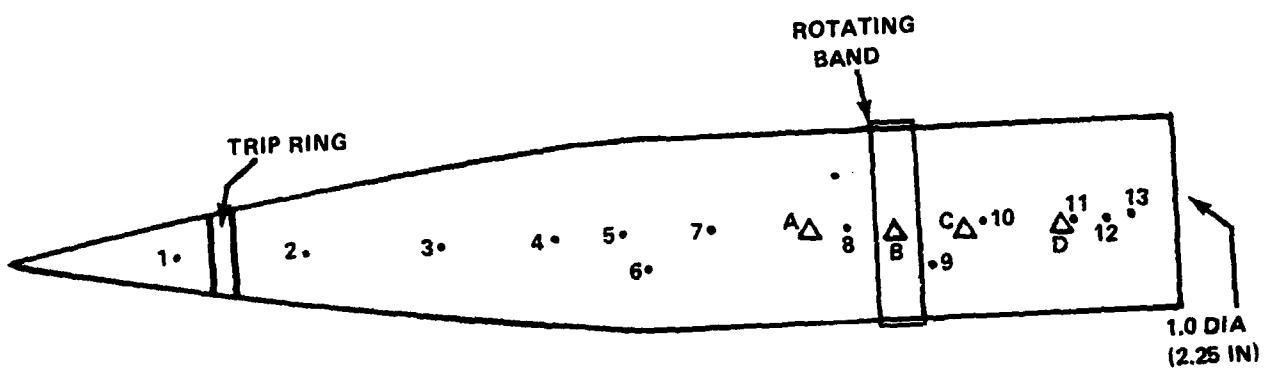
The model used for this test was a six-caliber secant-ogive cylinder as shown in Figure 1. It consisted of a three-caliber nose section and a three-caliber straight, cylindrical afterbody. The model was 13.5 inches in length, with a 2.25 inch base diameter. Furthermore, two rotating bands of 0.5-inch width, .040 inch and .080 inch height were located, and used individually, at an X/D of 4.39 on the model afterbody.

The model was equipped with thirteen static pressure ports aligned along the length of the model. Eleven of the ports were in one ray, and the remaining two were offset 22-1/2° from the ray. This is illustrated in Figure 1.

Small plastic tubing connected the pressure ports to a bank of thirteen 5.0 psia transducers. The transducer output was then connected to the DARE (Data Acquisition and Recording Equipment) system.

In order to ensure a fully turbulent boundary layer at the measurement stations, a trip ring of 0.25-inch width was used. It was centered at an X/D of approximately 1.25. This 0.006-inch thick trip ring had two rows of .030-inch diameter steel balls spotwelded to it. There were 30 balls equally spaced to a

△ LDV SURVEY POSITION
• PRESSURE LOCATION



PRESSURE PORT NO.	X/D
1	.889
2	1.556
3	2.222
4	2.791
5	3.129
6	3.222
7	3.556
8	4.222
9	4.556
10	4.889
11	5.333
12	5.611
13	5.778

LDV SURVEY STATION	X/D
A	4.00
B	4.39
C	4.70
D	5.25

FIGURE 1. MODEL GEOMETRY

row, with the back row staggered from the front row. This trip ring was used on all pressure and LDV runs. A photograph of the model mounted in the tunnel is shown in Figure 2.

For the flowfield velocity measurements of this test, a two-dimensional forward scatter LDV system was used. The focal volume was calculated to have a diameter of 0.007 inches. A complete system schematic can be found in Figure 3, and a description can be found in Reference 1.

TEST MATRIX AND PROCEDURES

The LDV test matrix included flowfield surveys at four axial stations, at three angles-of-attack (0° , $+2^\circ$), and for two rotating band configurations. The LDV surveys were taken at X/D locations of 4.00, 4.39, 4.70, and 5.25. Of the four survey stations, one was located in front of the rotating band, another was directly over it, and the final two were behind it.

It was found that LDV measurements could be made to within 0.020 inches from the model wall. From 0.020 inch to 0.100 inch from the wall, samples were taken every 0.005 inch; from 0.100 inches to 0.200 inch, samples were taken every 0.010 inch. The data showed that the boundary layer was approximately 0.15-inch thick at $\alpha = 0^\circ$.

DATA REDUCTION

The 2-D LDV system was utilized to obtain the boundary layer velocity profiles. Each profile consisted of approximately 25 survey points. At each survey point, 2500 data samples were taken and recorded on magnetic tape. At the completion of the run, a Data General Nova II minicomputer was used to compute a mean velocity, the standard deviations of the velocities, and the cross-velocity correlations.

These values are defined as:

$$\bar{U} = \frac{\sum_{i=1}^N U_i}{N}$$

$$\bar{V} = \frac{\sum_{i=1}^N V_i}{N}$$

$$\langle U' \rangle = \sqrt{\frac{\sum_{i=1}^N (U_i - \bar{U})^2}{N}}$$

$$\langle V' \rangle = \sqrt{\frac{\sum_{i=1}^N (V_i - \bar{V})^2}{N}}$$

$$\overline{U' V'} = \sum_{i=1}^N (U_i - \bar{U})(V_i - \bar{V})$$

1. Yanta, W. J., "A Three-Dimensional Laser Doppler Velocimeter (LDV) for Use in Wind Tunnels," Paper IEEE 79 CH 1500-8AES, presented at International Congress on Instrumentation in Aerospace Facilities, Monterey, California, September 1979.

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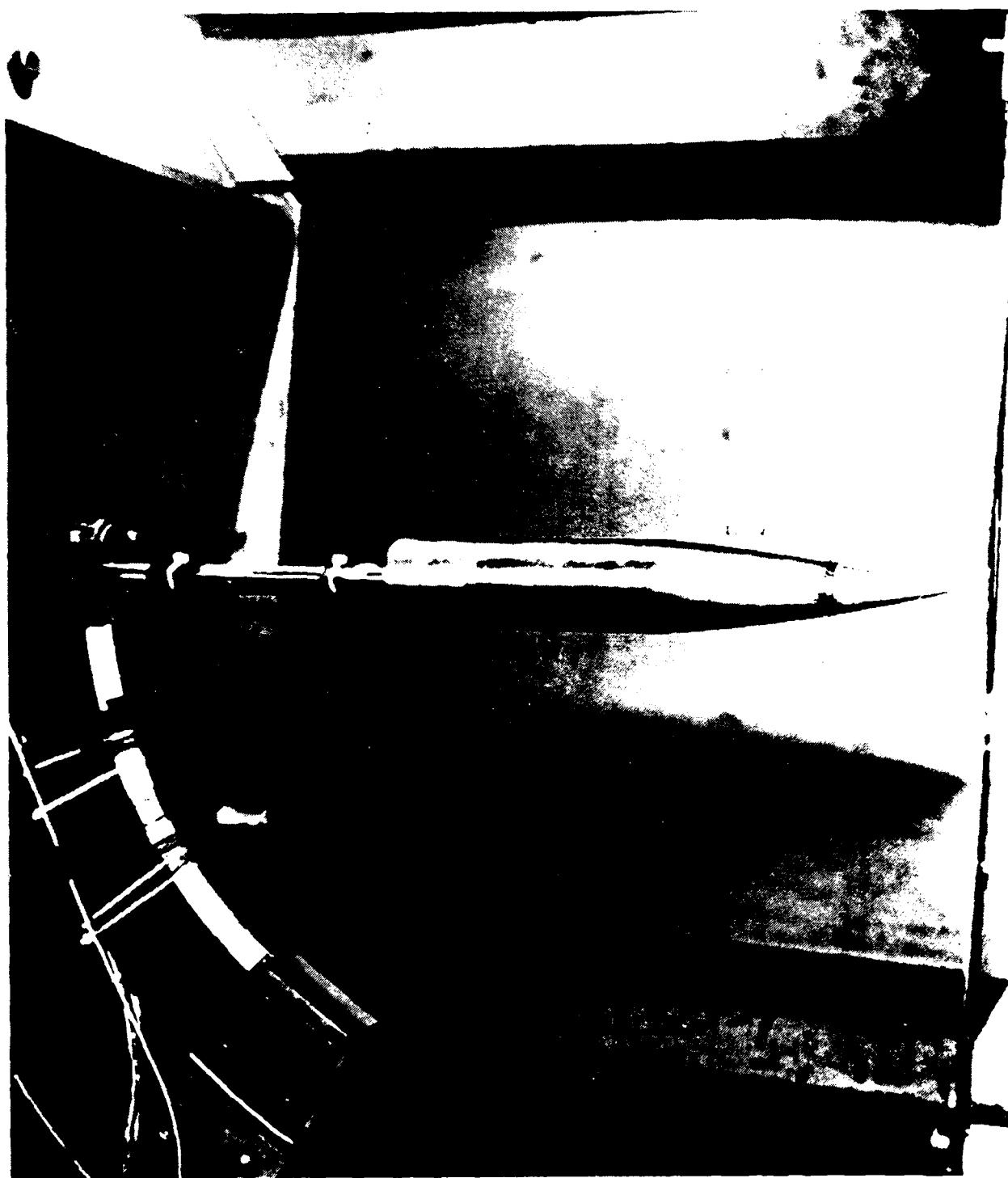


FIGURE 2. PRESSURE MODEL MOUNTED IN NSWC'S SUPERSONIC TUNNEL 2

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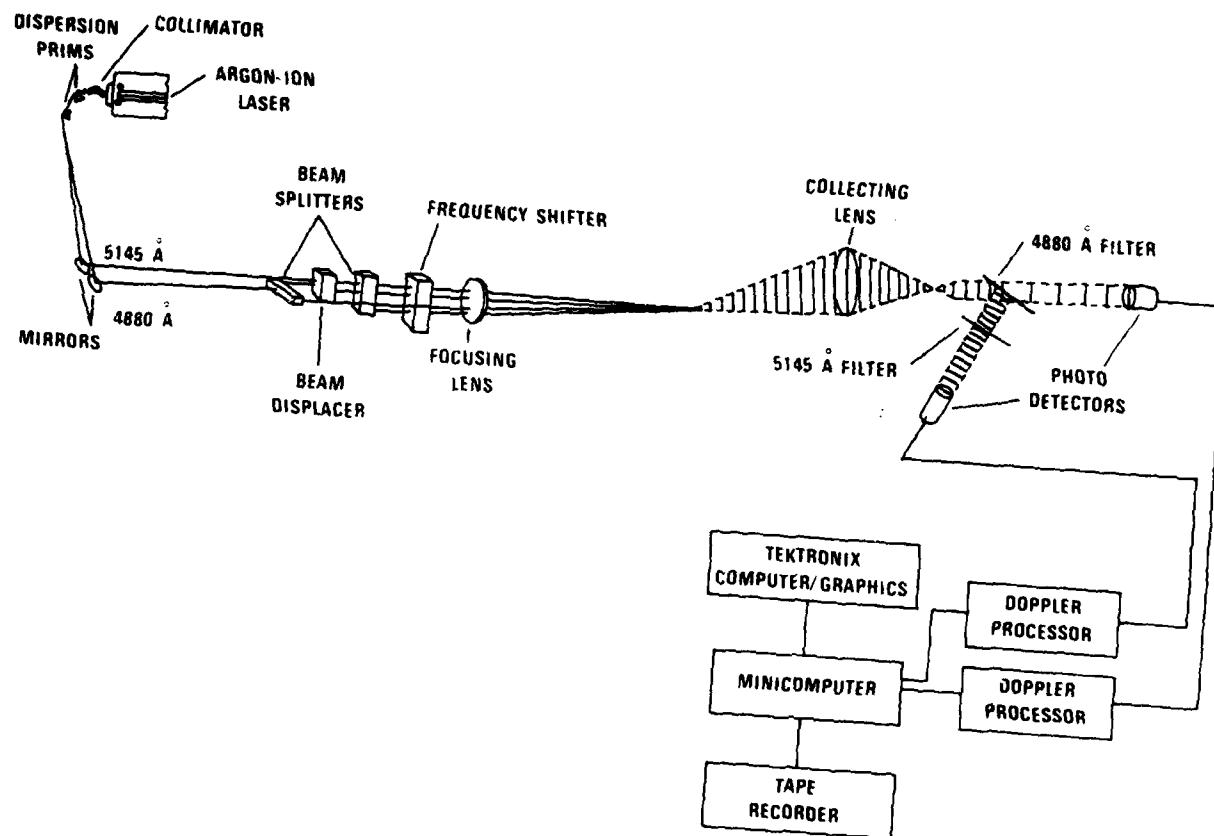


FIGURE 3. SCHEMATIC OF 2-D LDV

Routines were available to plot the velocity values versus the y-coordinate values.

RESULTS

Appendices A, B, and C provide the results gathered from this test.

Appendix A gives the velocity, turbulence intensity, and Reynolds stress profiles. This information was taken at four axial stations, three angles of attack, and two rotating band configurations.

Appendix B details the surface pressure data. Figures B-1(a-n) plot pressure coefficients vs. roll angle at three angles of attack, four axial stations, with two rotating band configurations. Figure B-2 shows the plot of C_p vs. X/D at only 0° angle of attack, but with both rotating bands.

Appendix C provides a tabulated form of the same information given in Appendix A.

NOMENCLATURE

A_∞	- Speed of sound (free stream)
C_p	- Pressure coefficient
D	- Base diameter (2.25 inches)
N	- Number of sample data points
P	- Local wall pressure
P_∞	- Free stream static pressure
R.b.	- Rotating band
U	- Local velocity parallel to model surface
USD	- U-Component velocity (standard deviation)
V	- Local velocity perpendicular to model surface
VSD	- V-Component velocity (standard deviation)
X	- Distance from nosetip measured parallel to model surface
XX	- Pressure port
Y	- Distance measured perpendicular to model surface
α	- Angle-of-attack
γ	- Ratio of specific heats = 1.4
$\langle \rangle$	- RMS value
(-)	- Average value
(')	- Fluctuation from mean value

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APPENDIX A
VELOCITY, TURBULENCE INTENSITY, REYNOLDS STRESS PROFILES

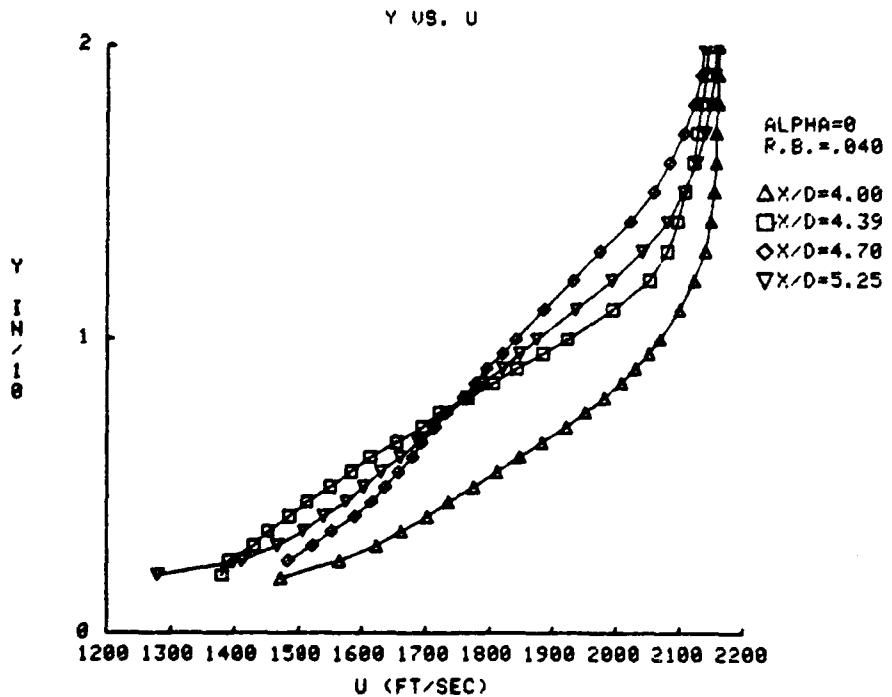


FIGURE A-1. U-COMPONENT OF VELOCITY

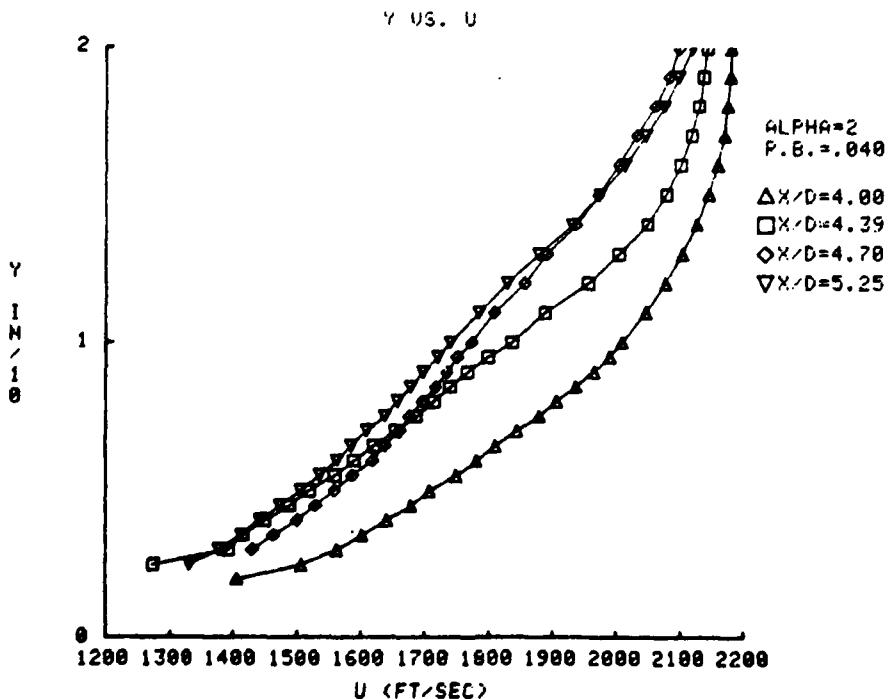


FIGURE A-2. U-COMPONENT OF VELOCITY ($\alpha = 2^\circ$, LEEWARD)

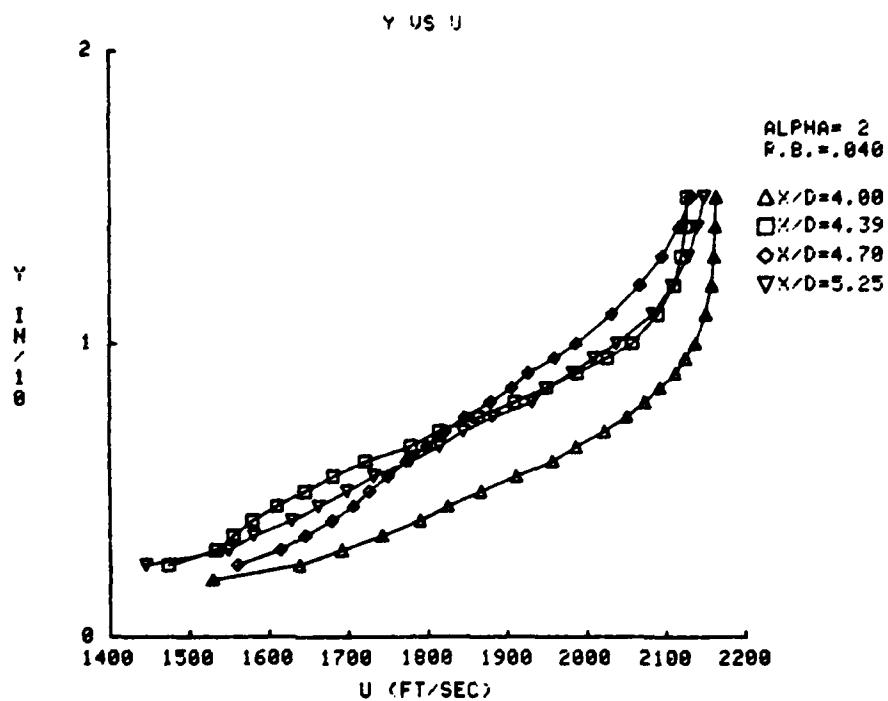
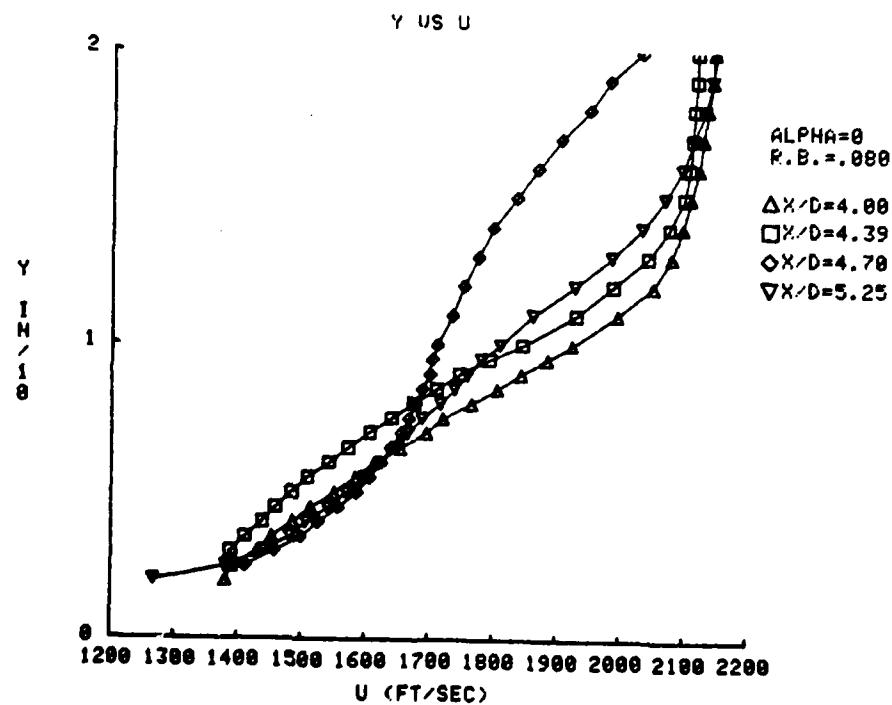
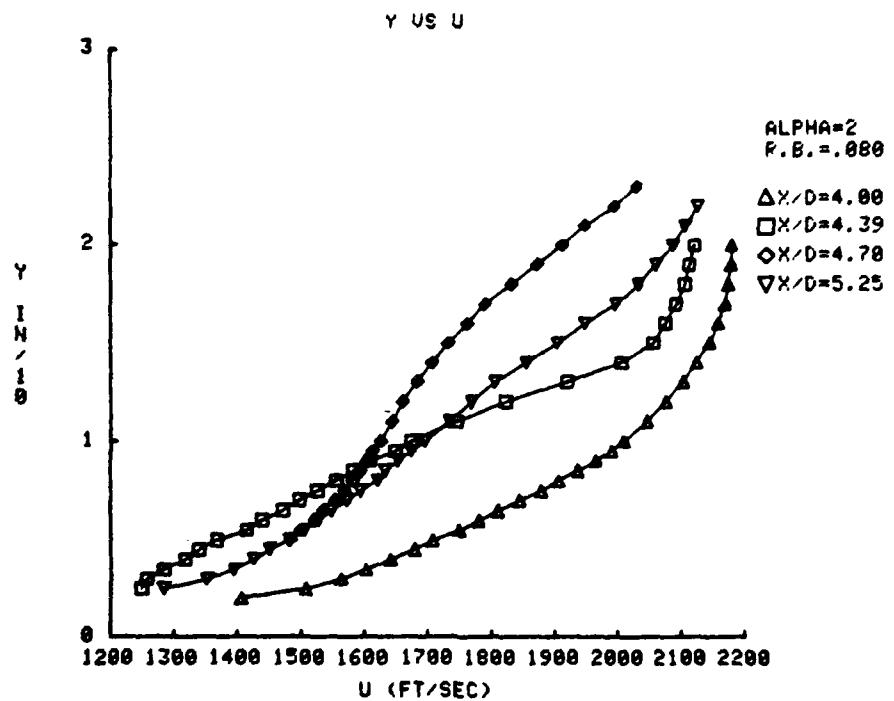
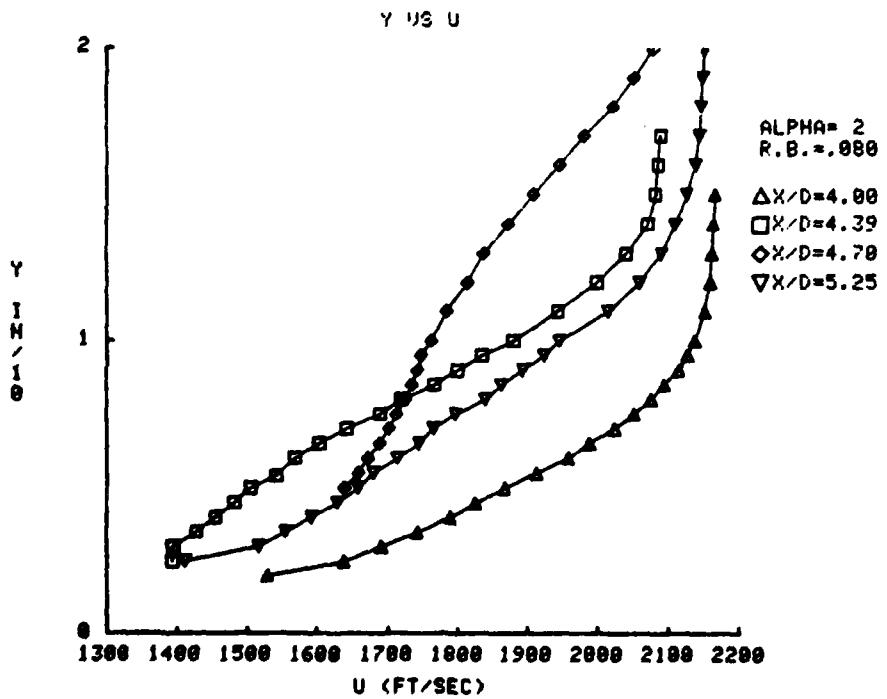
FIGURE A-3. U-COMPONENT OF VELOCITY ($\alpha = 2^\circ$, WINDWARD)

FIGURE A-4. U-COMPONENT OF VELOCITY

FIGURE A-5. U-COMPONENT OF VELOCITY ($\alpha = 2^\circ$, LEEWARD)FIGURE A-6. U-COMPONENT OF VELOCITY ($\alpha = 2^\circ$, WINDWARD)

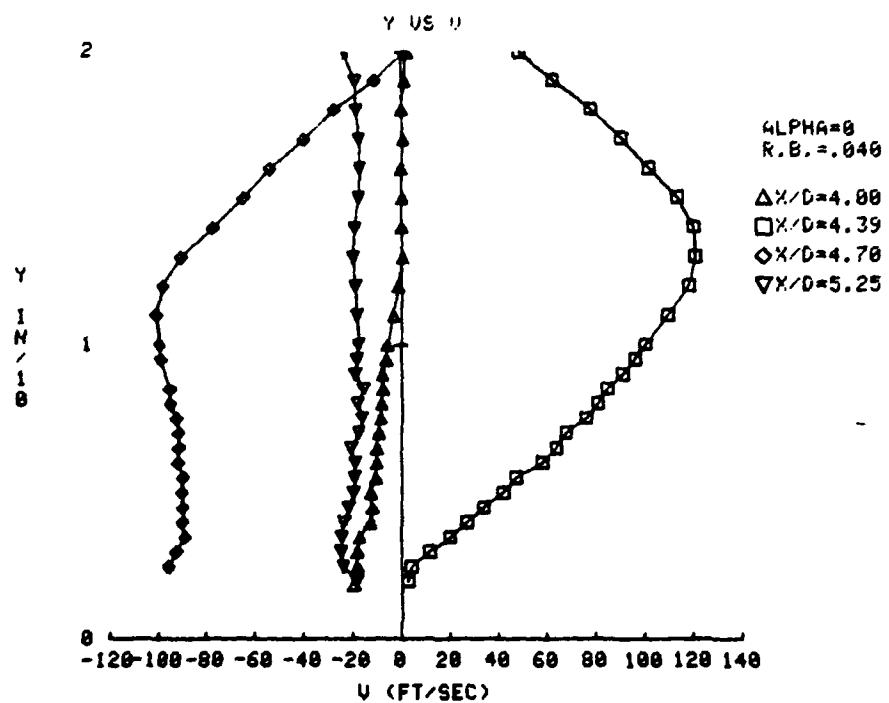
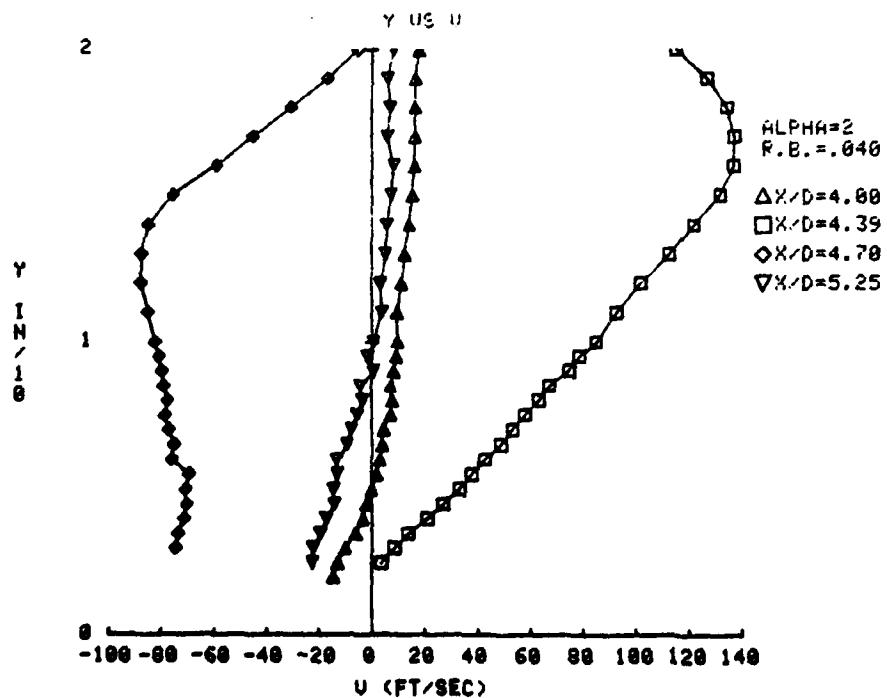


FIGURE A-7. V-COMPONENT OF VELOCITY

FIGURE A-8. V-COMPONENT OF VELOCITY ($\alpha = 2^\circ$, LEEWARD)

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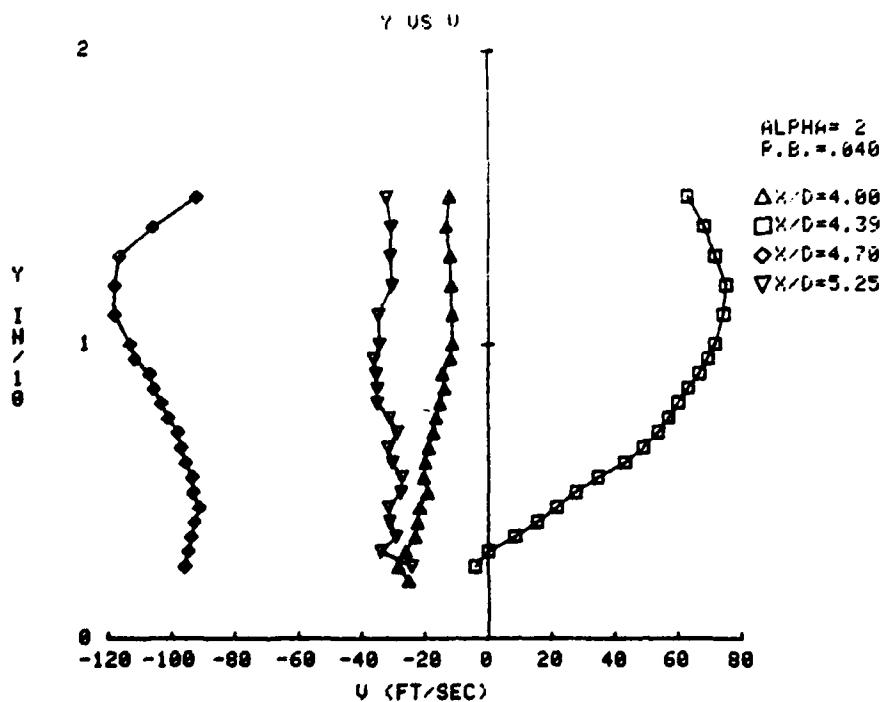


FIGURE A-9. V-COMPONENT OF VELOCITY ($\alpha = 2^\circ$, WINDWARD)

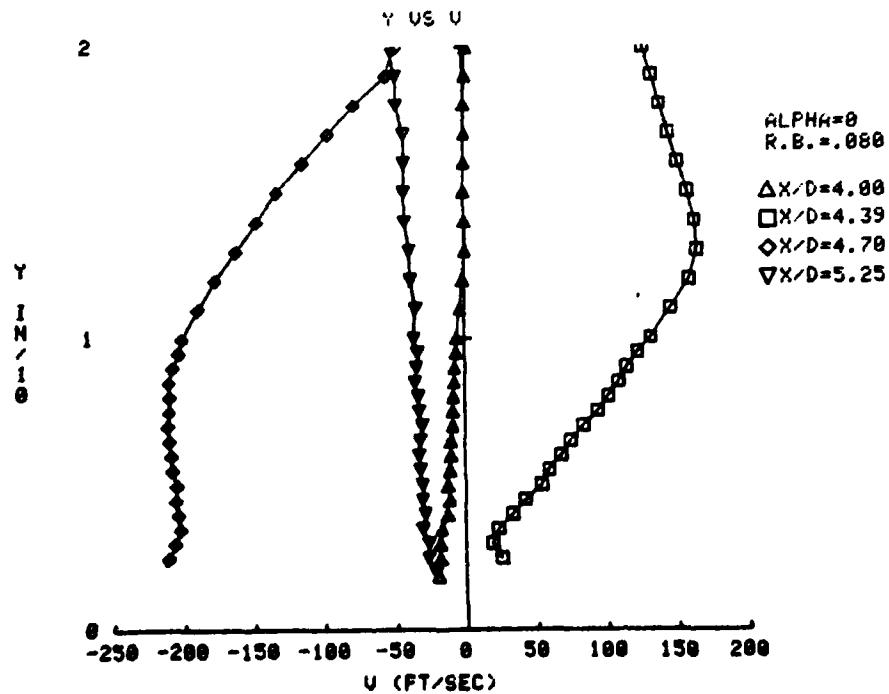
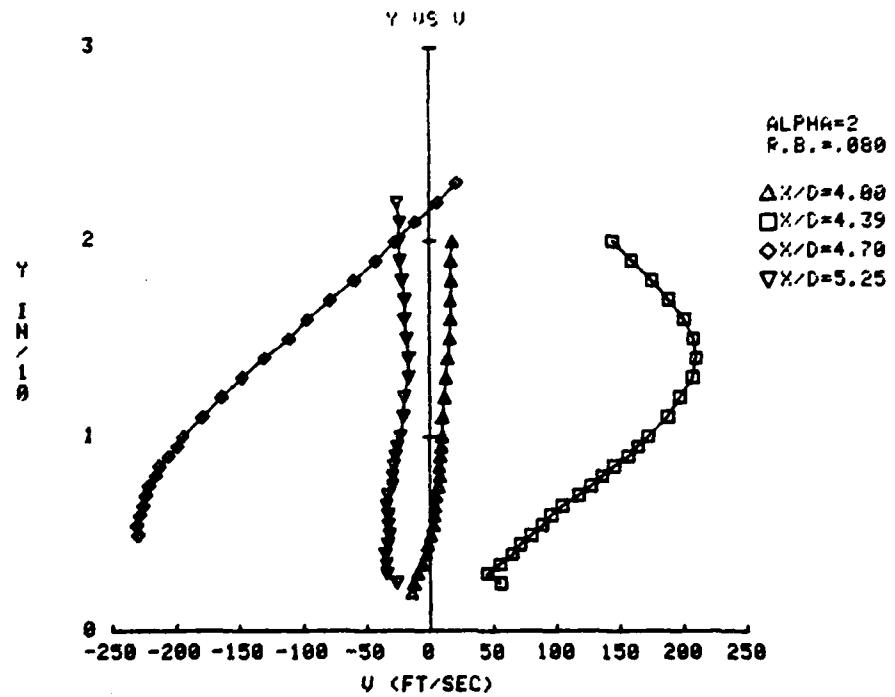
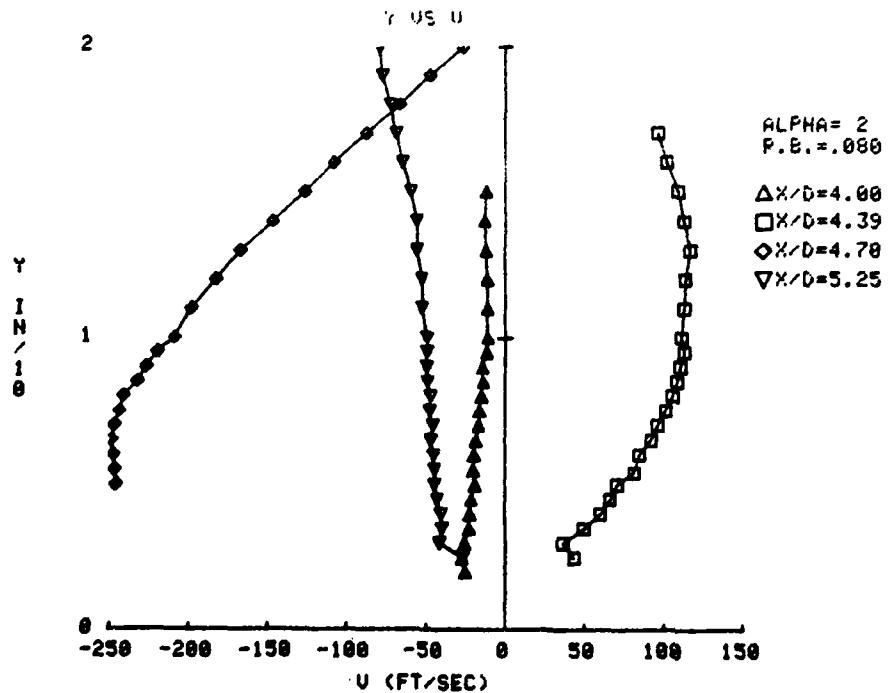


FIGURE A-10. V-COMPONENT OF VELOCITY

FIGURE A-11. V-COMPONENT OF VELOCITY ($\alpha = 2^\circ$, LEEWARD)FIGURE A-12. V-COMPONENT OF VELOCITY ($\alpha = 2^\circ$, WINDWARD)

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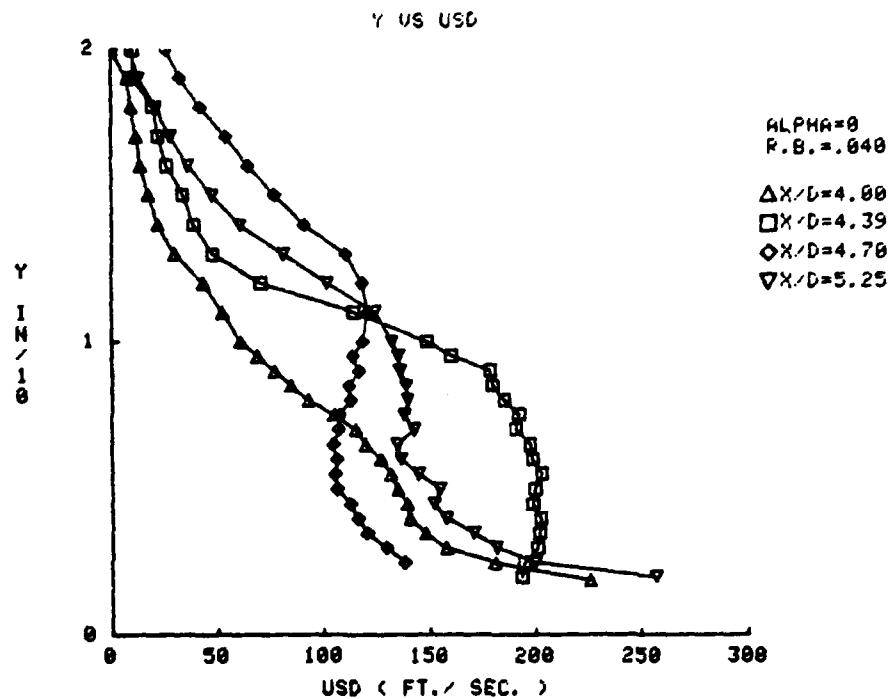


FIGURE A-13. U-COMPONENT STANDARD DEVIATIONS

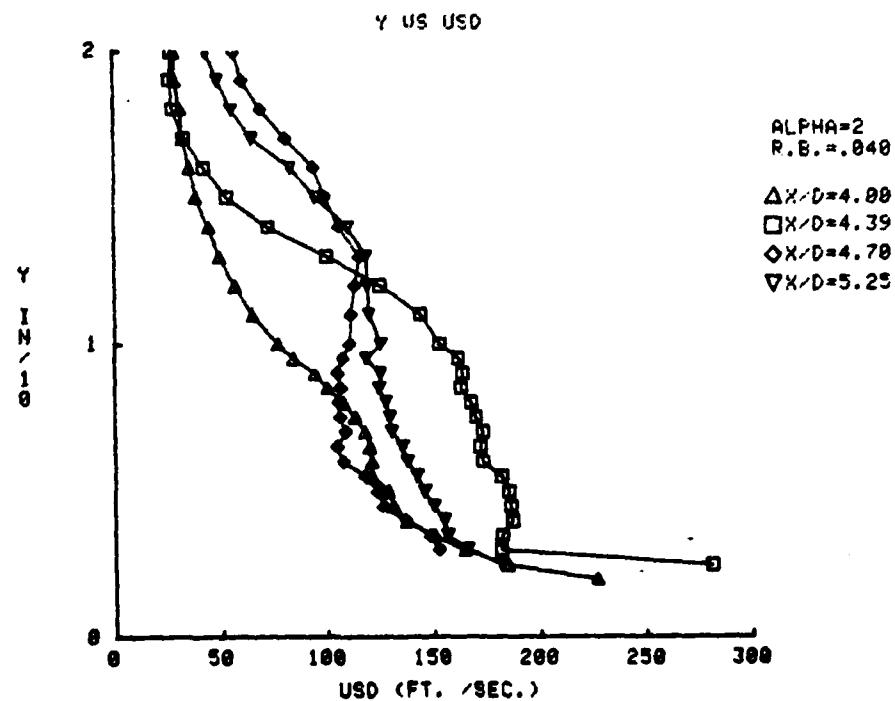


FIGURE A-14. U-COMPONENT STANDARD DEVIATIONS ($\alpha=2^\circ$, LEEWARD)

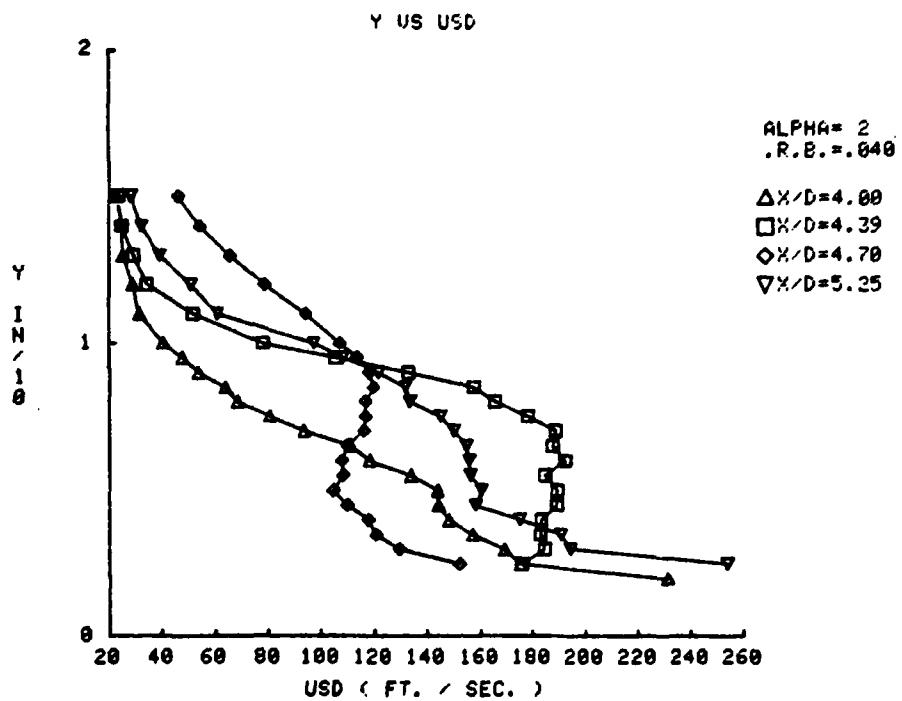
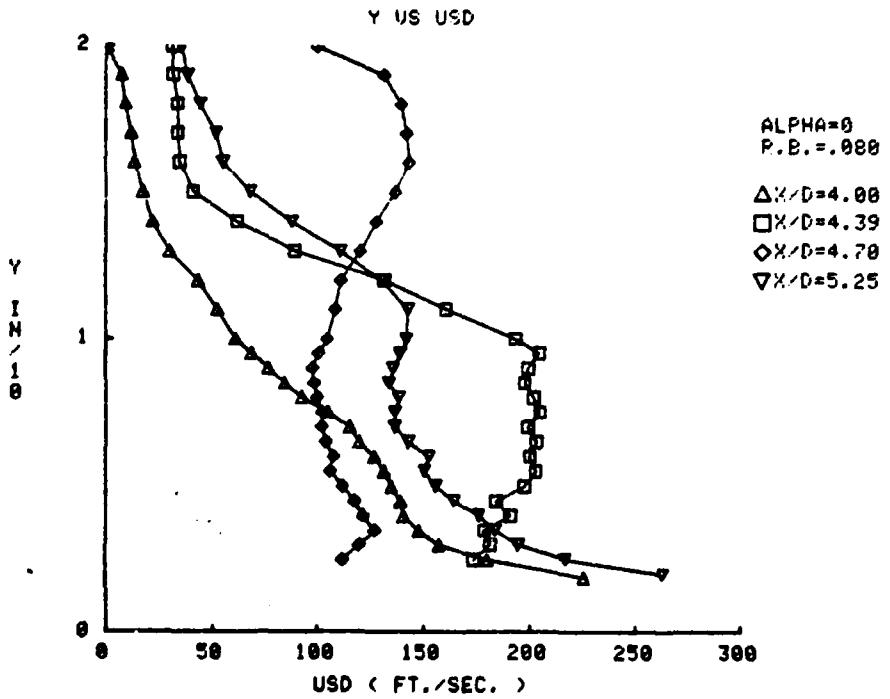
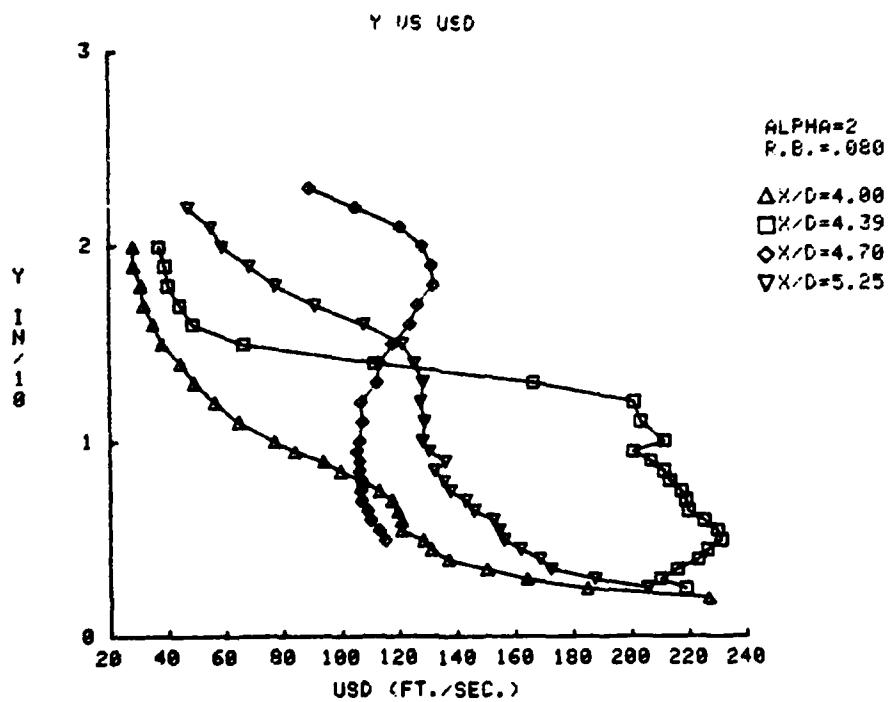
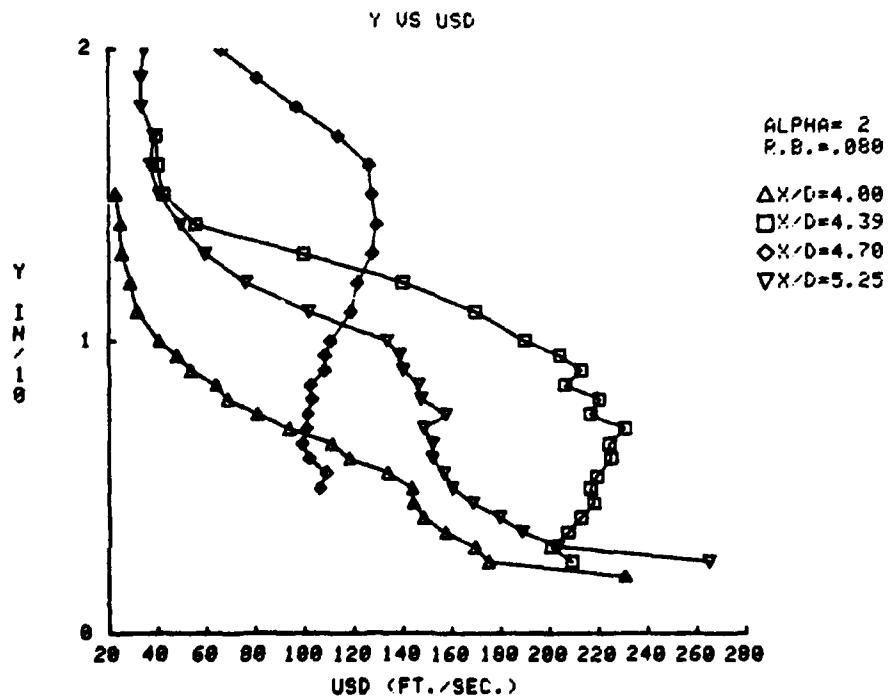
FIGURE A-15. U-COMPONENT STANDARD DEVIATIONS ($\alpha = 2^\circ$, WINDWARD)

FIGURE A-16. U-COMPONENT STANDARD DEVIATIONS

FIGURE A-17. U-COMPONENT STANDARD DEVIATIONS ($\alpha = 2^\circ$, LEEWARD)FIGURE A-18. U-COMPONENT STANDARD DEVIATIONS ($\alpha = 2^\circ$, WINDWARD)

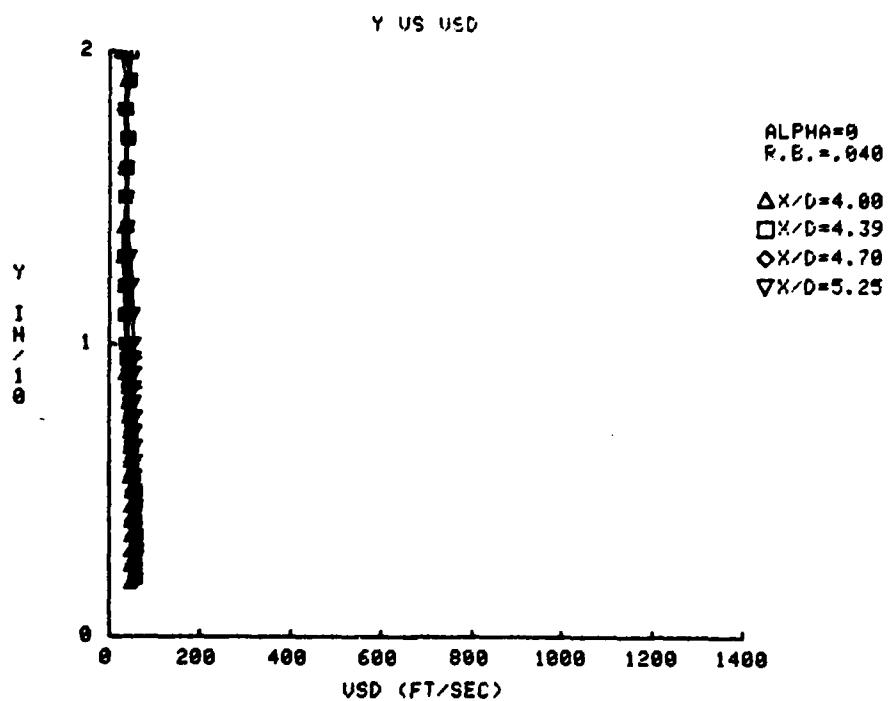
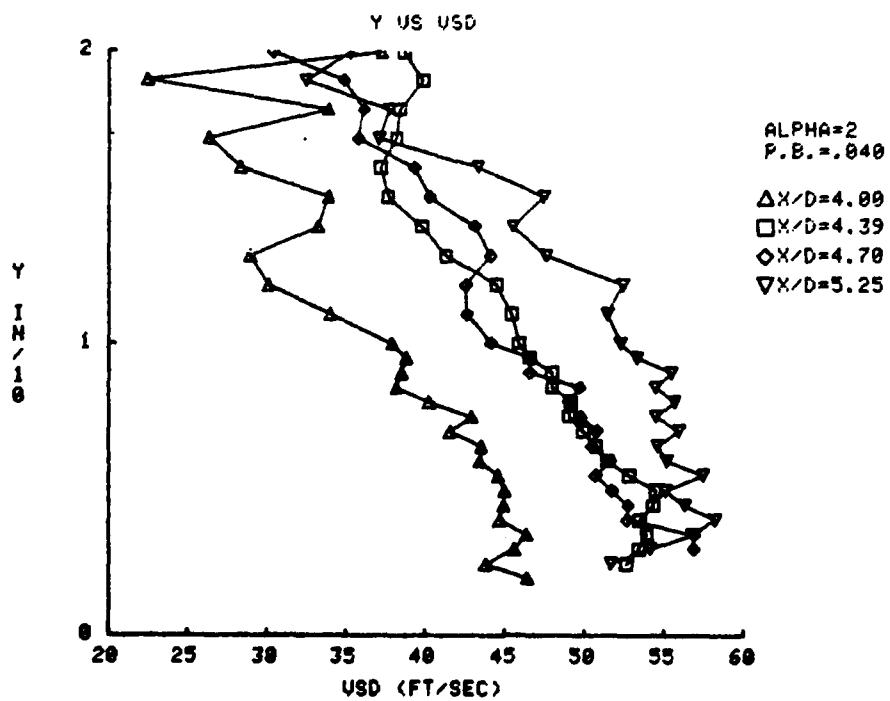


FIGURE A-19. V-COMPONENT STANDARD DEVIATIONS

FIGURE A-20. V-COMPONENT STANDARD DEVIATIONS ($\alpha = 2^\circ$, LEEWARD)

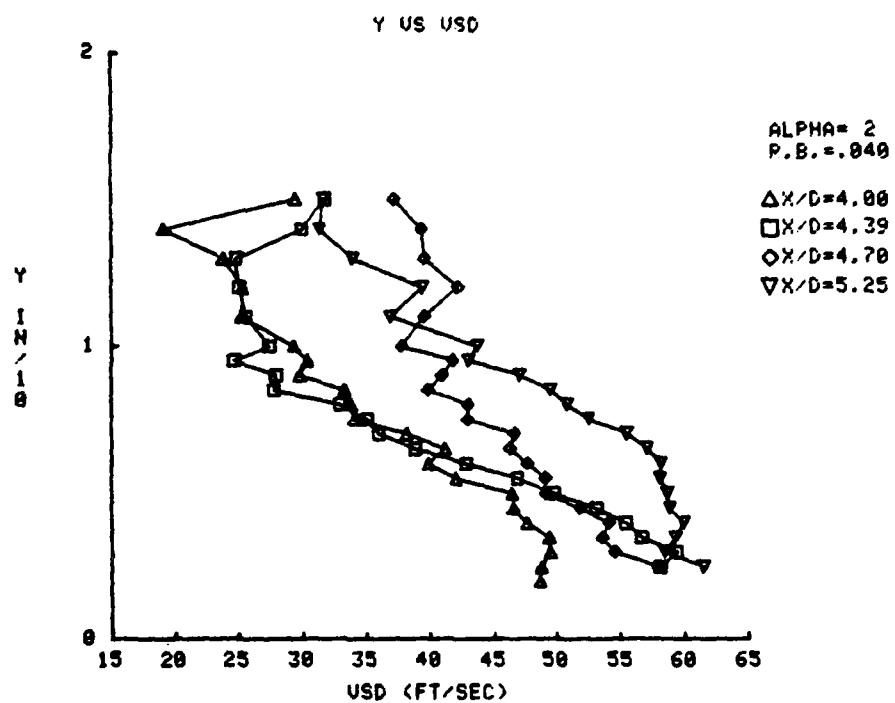
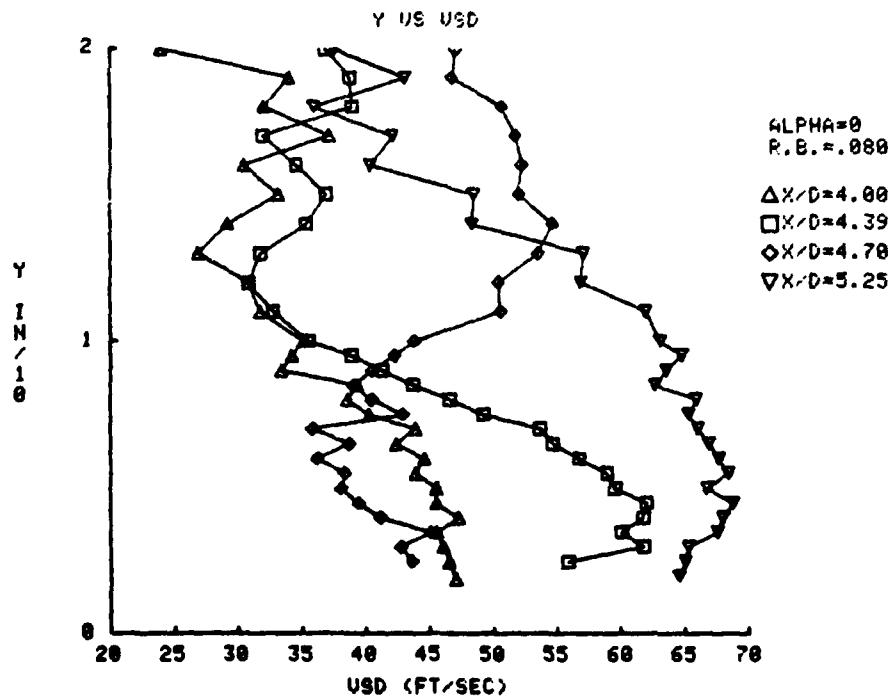
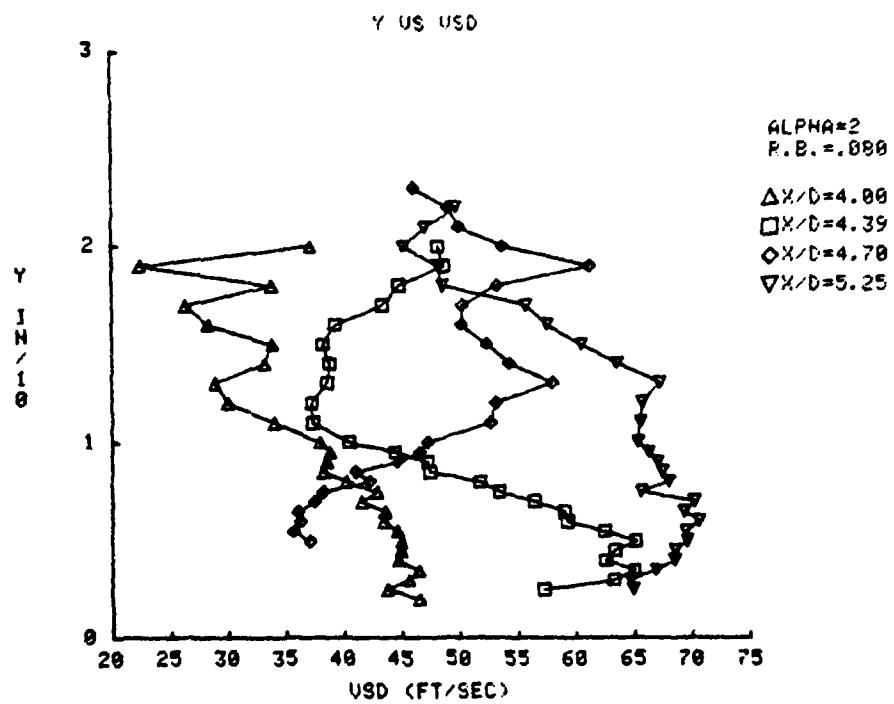
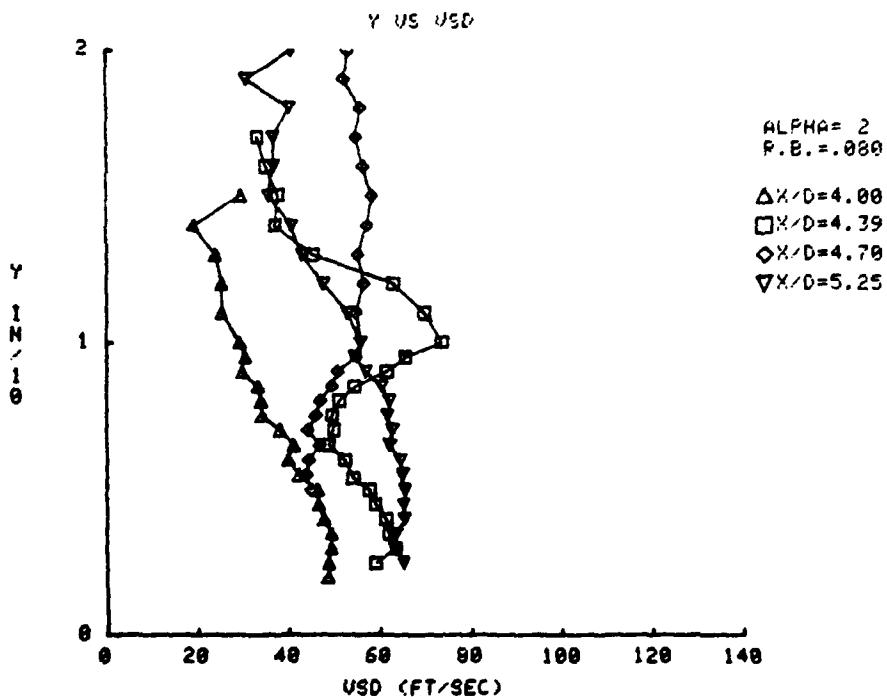
FIGURE A-21. V-COMPONENT STANDARD DEVIATIONS ($\alpha = 2^\circ$, WINDWARD)

FIGURE A-22. V-COMPONENT STANDARD DEVIATIONS

FIGURE A-23. V-COMPONENT STANDARD DEVIATIONS ($\alpha = 2^\circ$, LEEWARD)FIGURE A-24. V-COMPONENT STANDARD DEVIATIONS ($\alpha = 2^\circ$, WINDWARD)

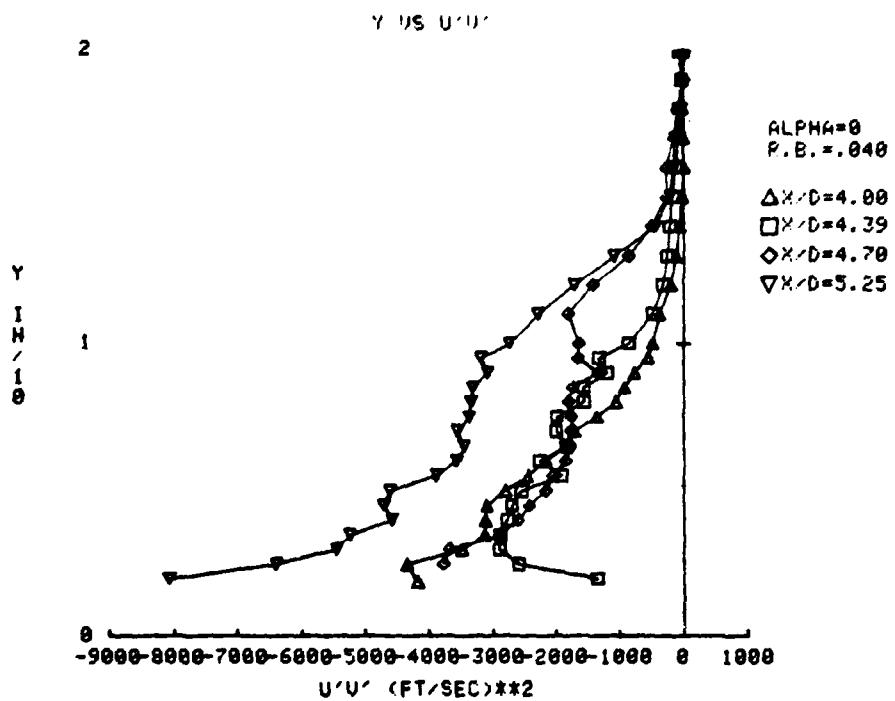
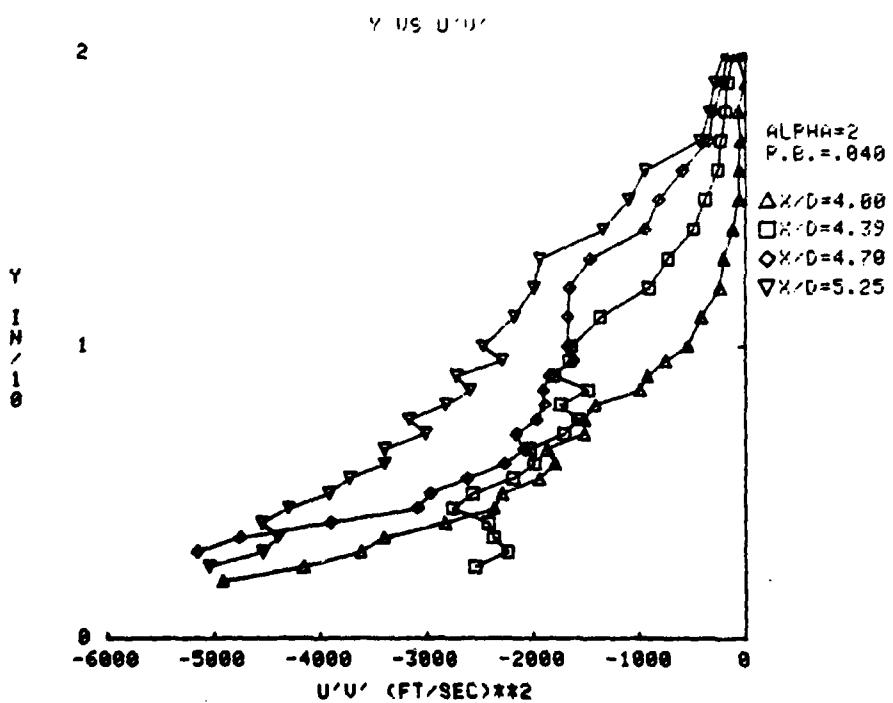


FIGURE A-25. REYNOLD'S STRESSES

FIGURE A-26. REYNOLD'S STRESSES ($\alpha = 2^\circ$, LEEWARD)

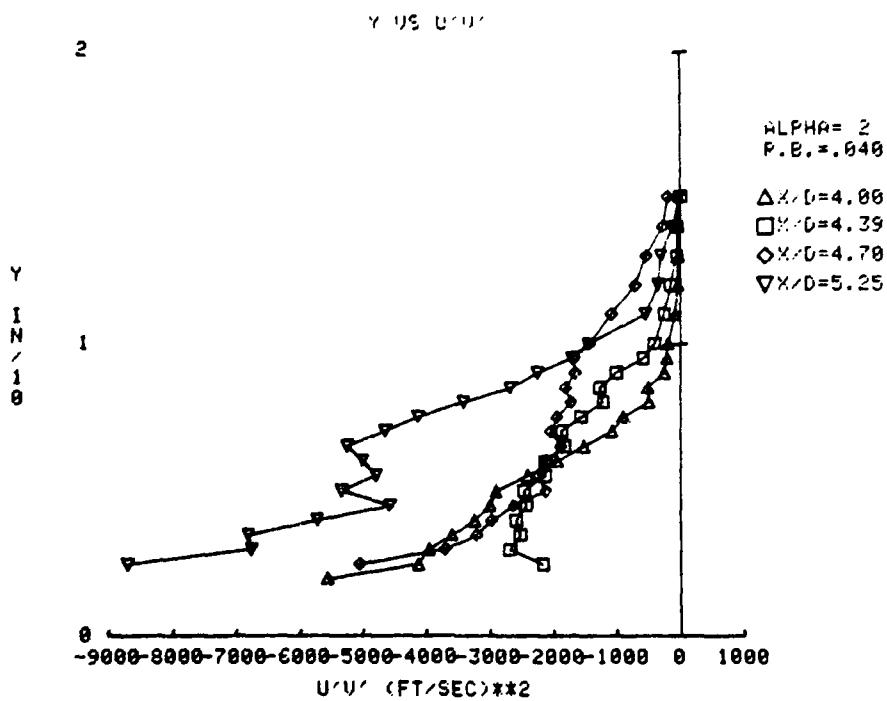
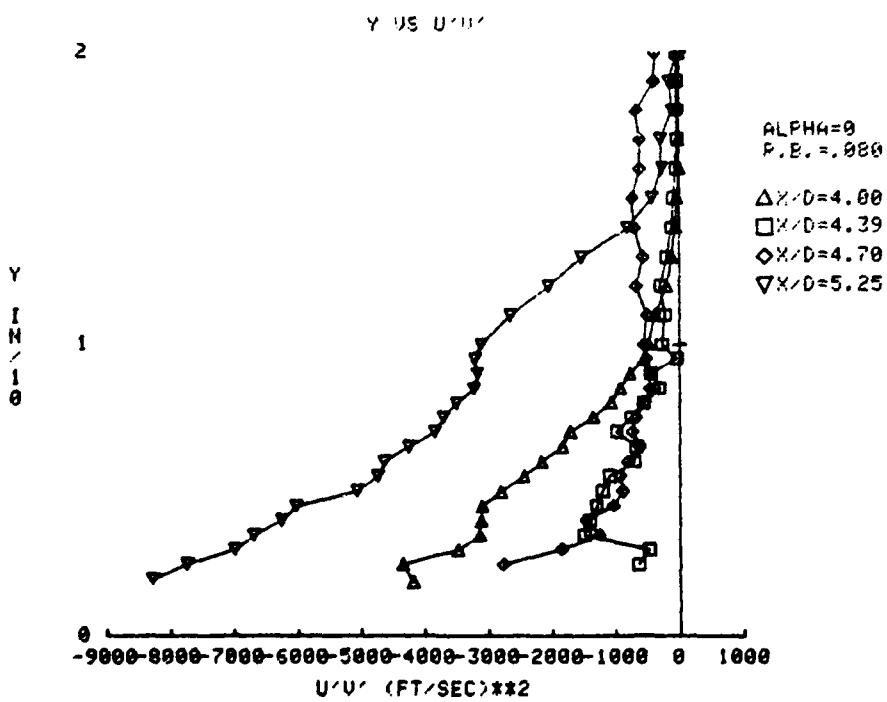
FIGURE A-27. REYNOLD'S STRESSES ($\alpha = 2^\circ$, WINDWARD)

FIGURE A-28. REYNOLD'S STRESSES

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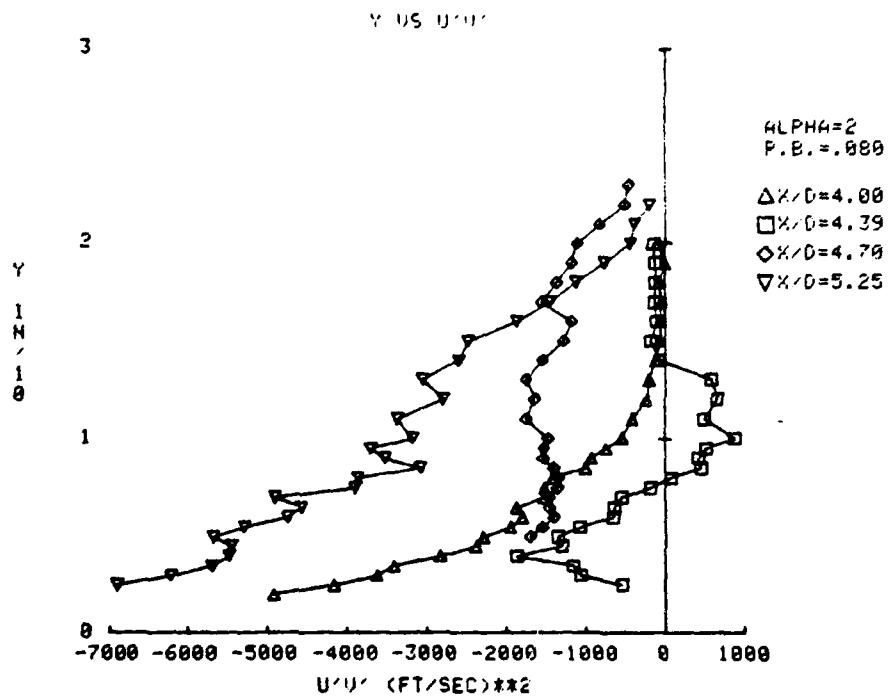


FIGURE A-29. REYNOLD'S STRESSES ($\alpha = 2^\circ$, LEEWARD)

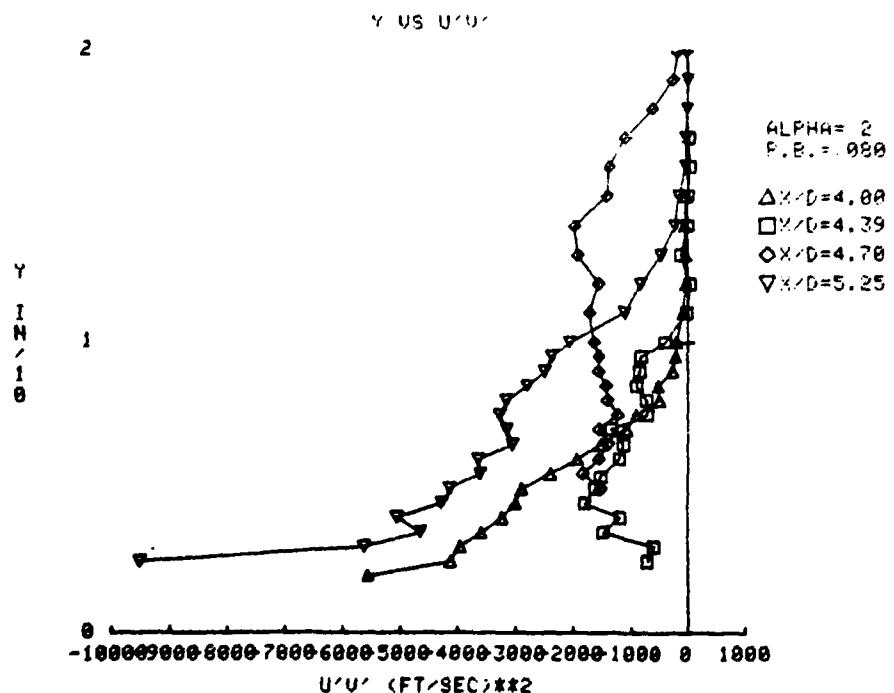


FIGURE A-30. REYNOLD'S STRESSES ($\alpha = 2^\circ$, WINDWARD)

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APPENDIX B
SURFACE PRESSURE DATA
ALPHA=2 DEG X/D = .889

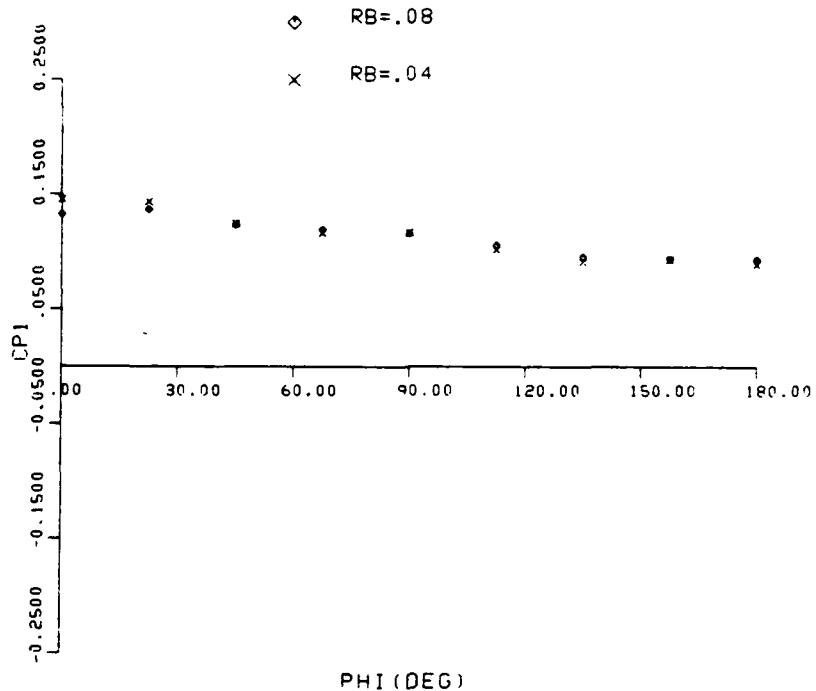


FIGURE B-1 (a). PRESSURE COEFFICIENTS vs. ROLL ANGLE

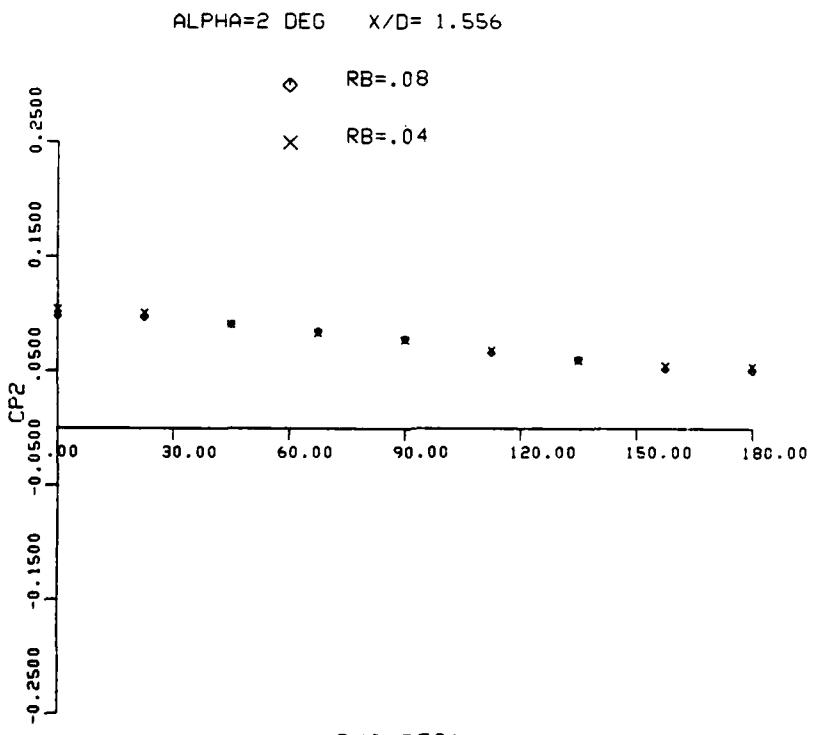


FIGURE B-1 (b). PRESSURE COEFICIENTS vs. ROLL ANGLE

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ALPHA=2 DEG X/D= 2.222

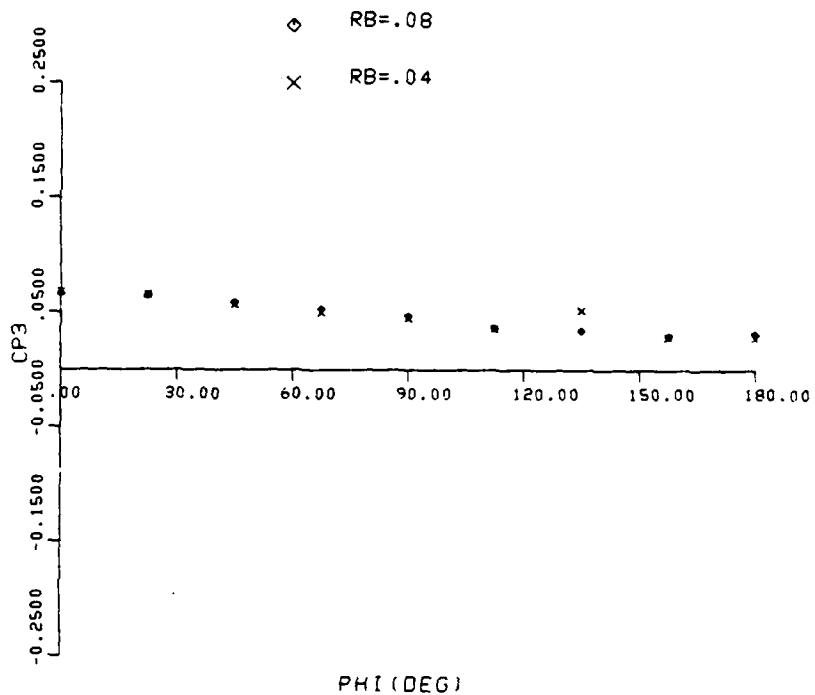


FIGURE B-1 (c). PRESSURE COEFFICIENTS vs. ROLL ANGLE

ALPHA=2 DEG X/D= 2.791

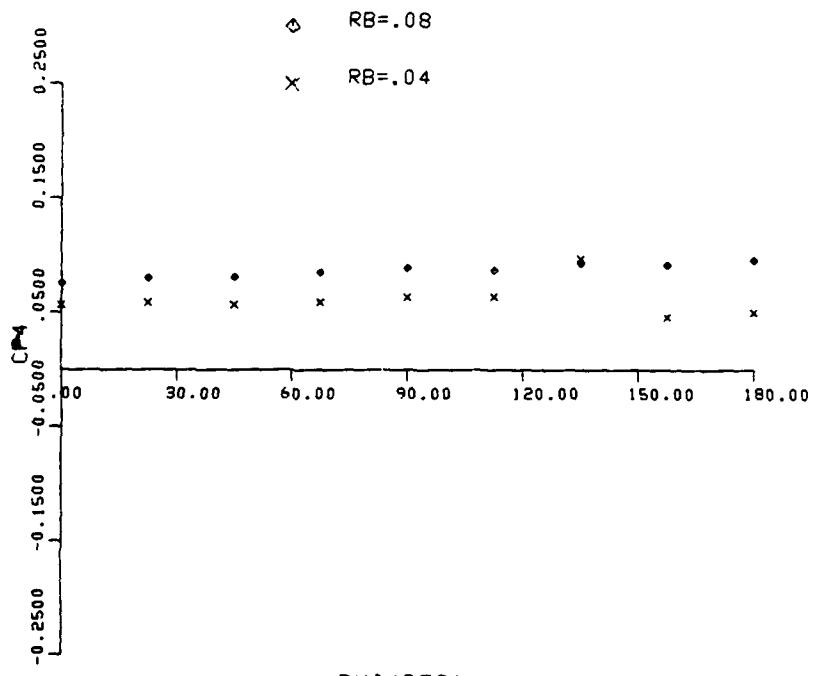


FIGURE B-1 (d). PRESSURE COEFFICIENTS vs. ROLL ANGLE

NSWC MP 82-430

ALPHA=2 DEG X/D= 3.129

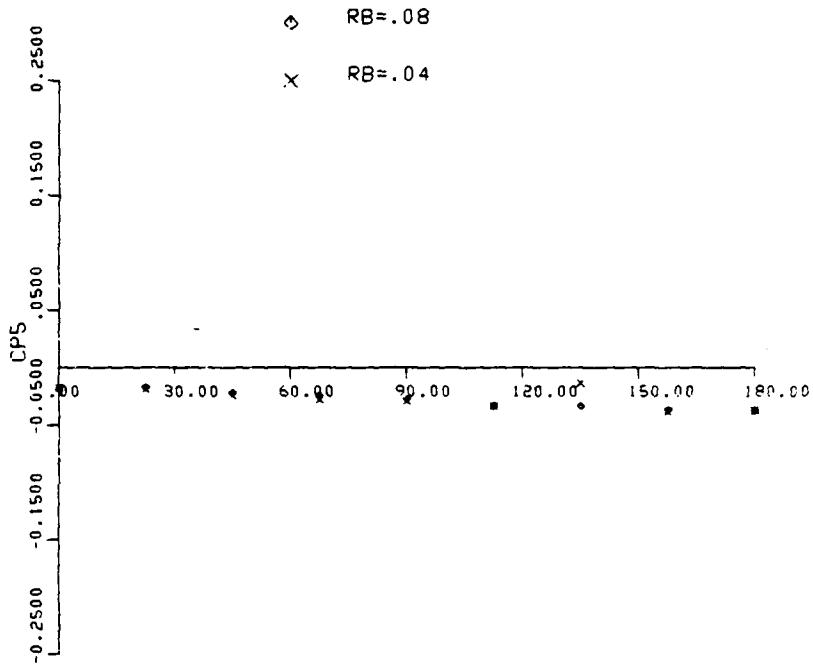


FIGURE B-1 (e). PRESSURE COEFFICIENTS vs. ROLL ANGLE

ALPHA=2 DEG X/D= 3.222

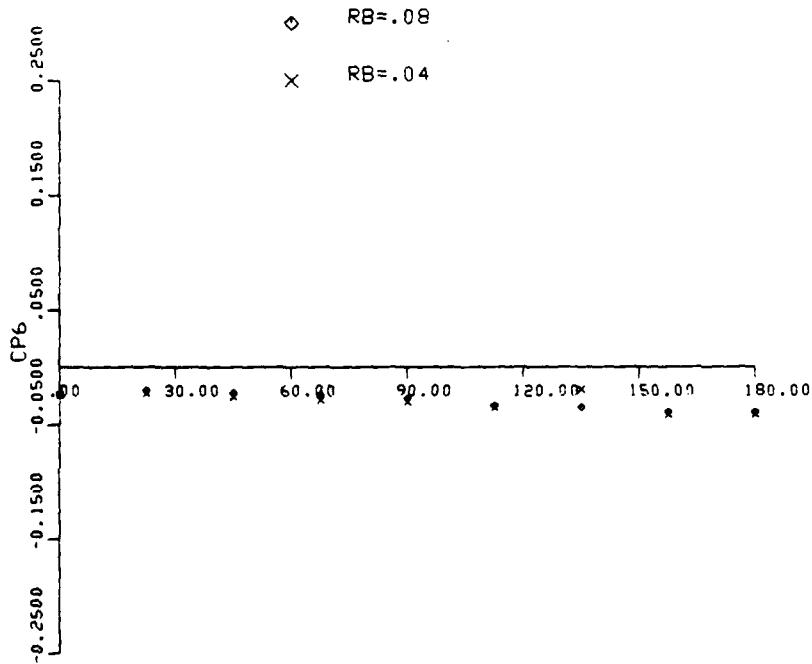


FIGURE B-1 (f). PRESSURE COEFFICIENTS vs. ROLL ANGLE

NSWC MP 82-430

ALPHA=2 DEG X/D= 3.556

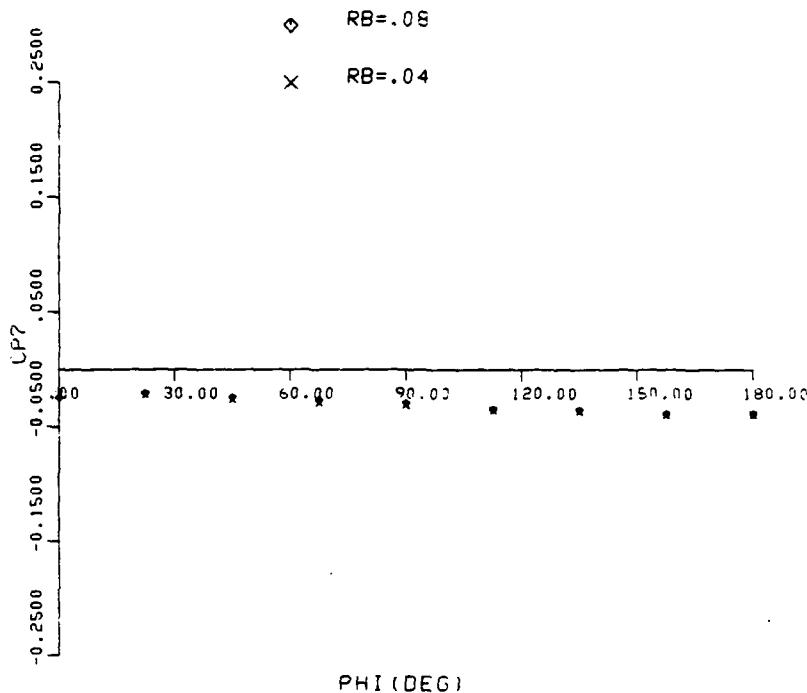


FIGURE B-1 (g). PRESSURE COEFFICIENTS vs. ROLL ANGLE

ALPHA=2 DEG X/D= 4.222

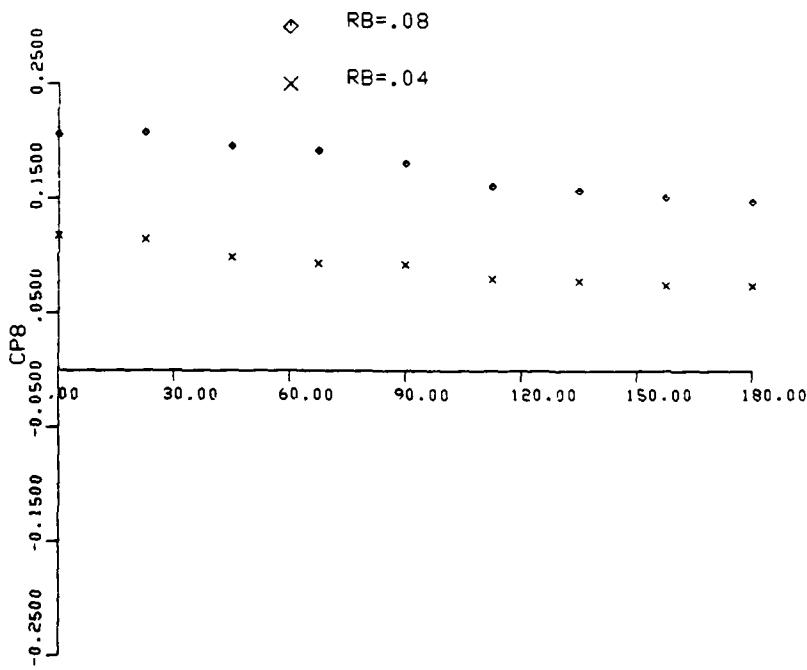


FIGURE B-1 (h). PRESSURE COEFFICIENTS vs. ROLL ANGLE

NSWC MP 82-430

ALPHA=2 DEG X/D = 4.556

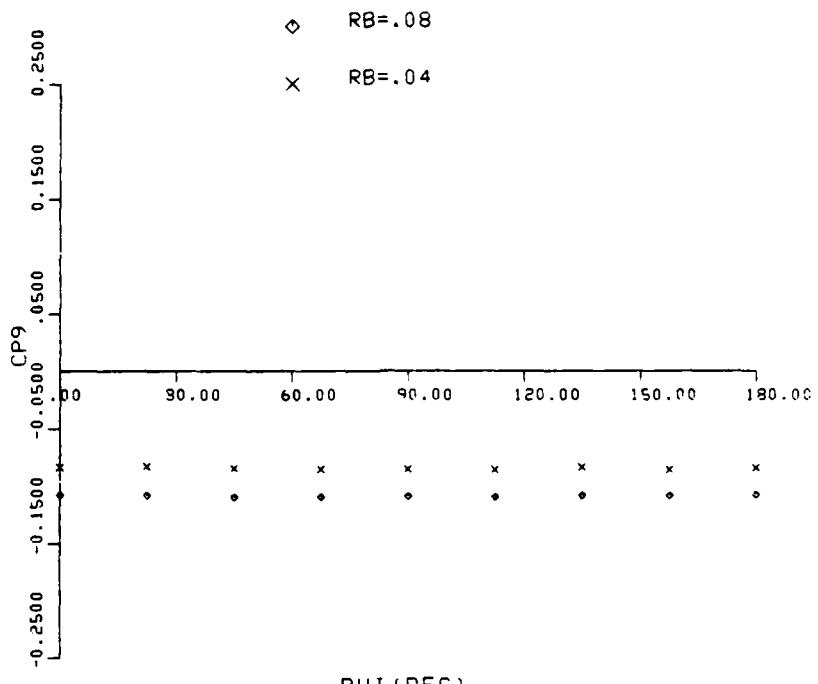


FIGURE B-1 (i). PRESSURE COEFFICIENTS vs. ROLL ANGLE

ALPHA=2 DEG X/D = 4.889

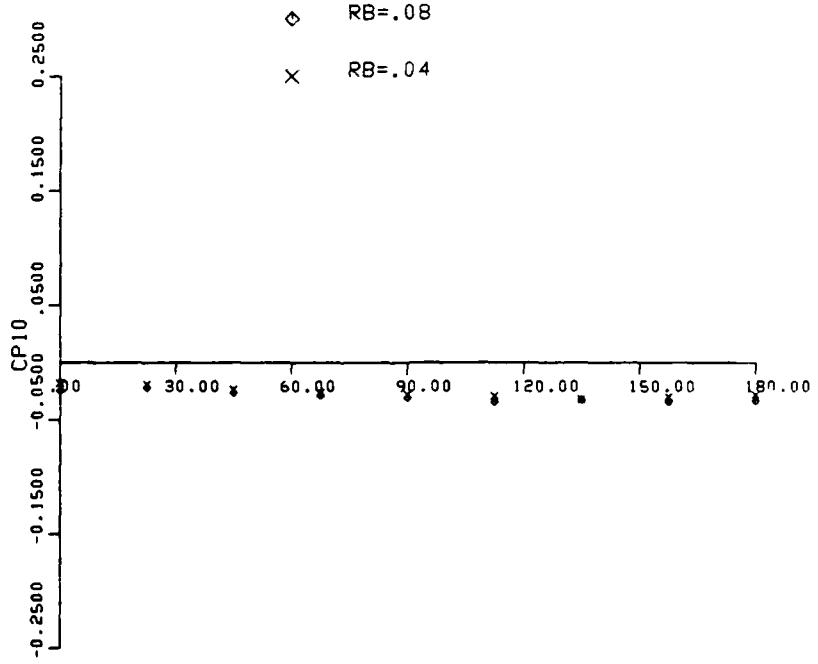


FIGURE B-1 (j). PRESSURE COEFFICIENTS vs. ROLL ANGLE

NSWC MP 82-430

ALPHA=2 DEG X/D= 5.333

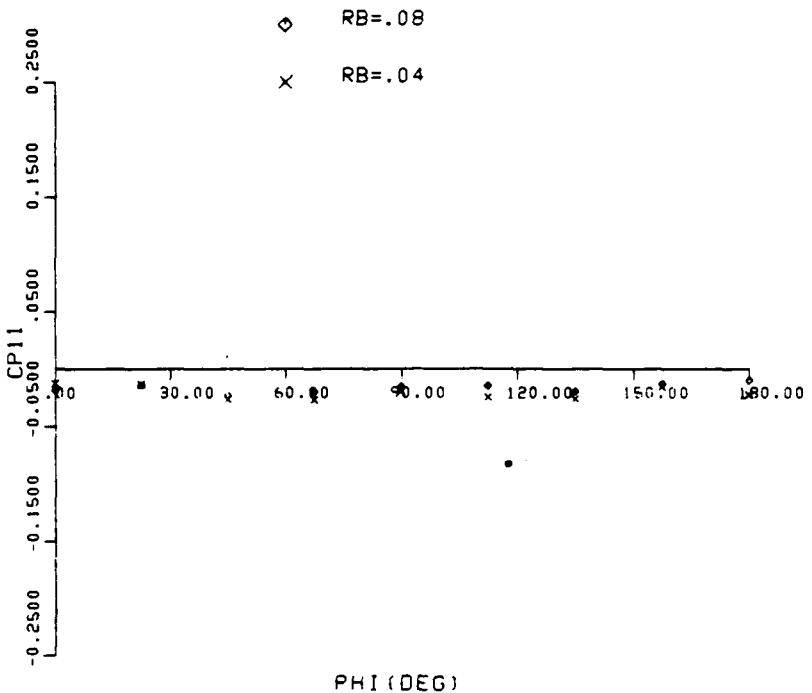


FIGURE B-1 (k). PRESSURE COEFFICIENTS vs. ROLL ANGLE

ALPHA=2 DEG X/D= 5.611

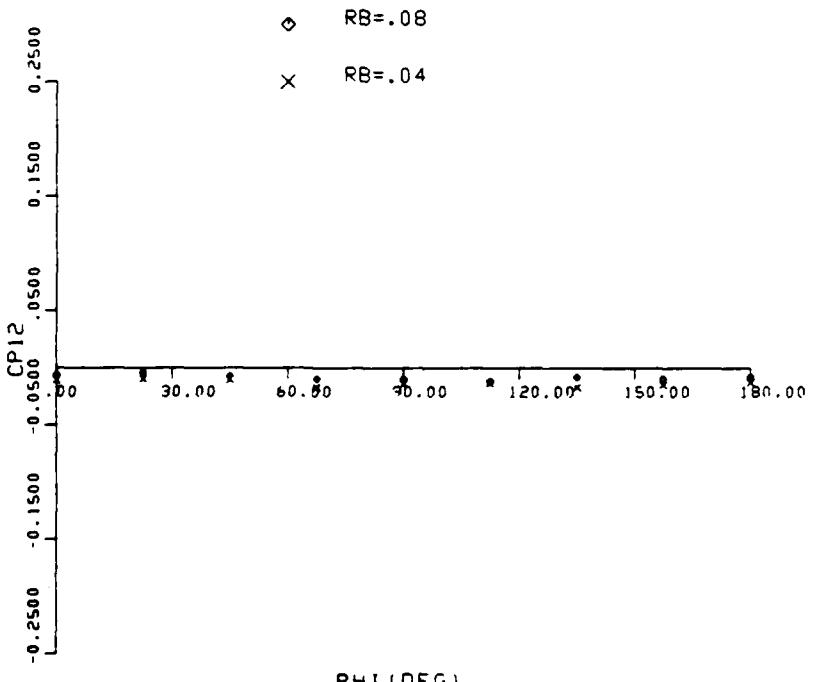


FIGURE B-1 (l). PRESSURE COEFFICIENTS vs. ROLL ANGLE

NSWC MP 82-430

ALPHA=2 DEG X/D= 5.778

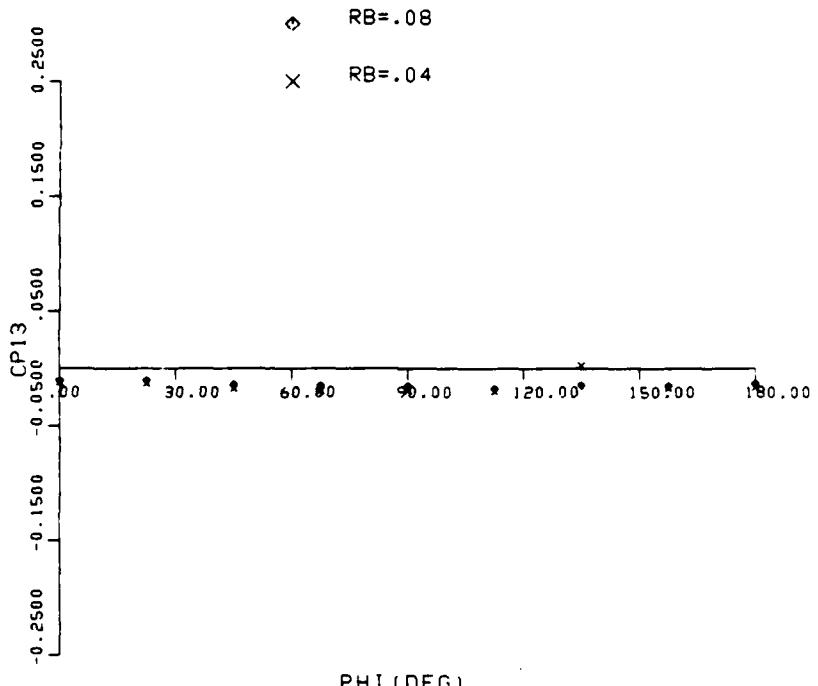


FIGURE B-1 (m). PRESSURE COEFFICIENTS vs. ROLL ANGLE

ALPHA=2 DEG X/D=6

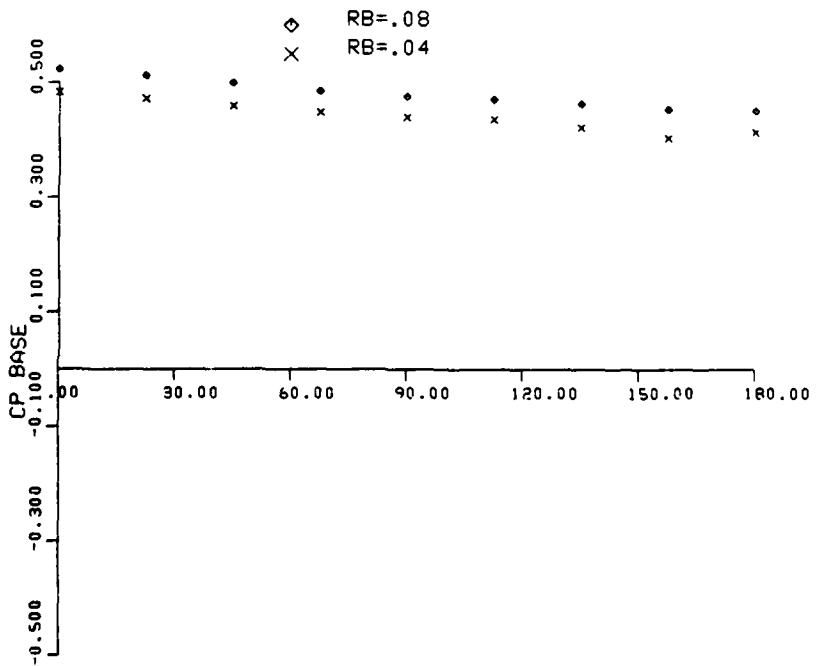


FIGURE B-1 (n). PRESSURE COEFFICIENTS vs. ROLL ANGLE

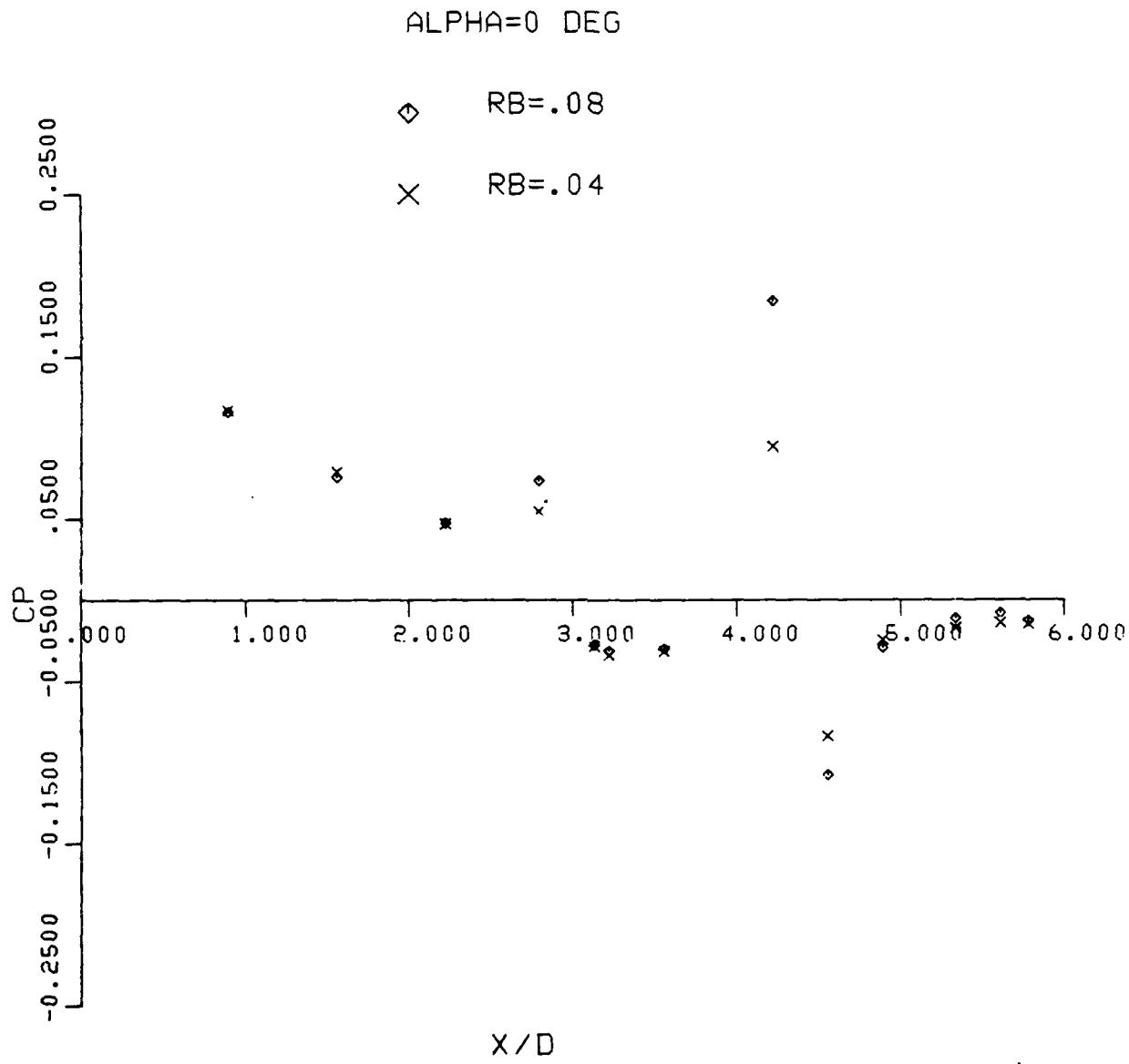


FIGURE B-2. PRESSURE COEFFICIENTS vs. X/D

APPENDIX C
TABULATED VELOCITY, TURBULENCE INTENSITY, REYNOLDS STRESS DATA

FILE NO. = 2	RUN# = 82051901	X/D = 4	NO. OF POINTS = 27	U	U/A	U/S0	U/u'	BETA4=0
0.919	135	1472.3	1565.4	9.3	-0.9279	225.6	47.9	-4183.0
0.925	136	1562.3	1623.6	-1.0256	-0.9254	180.4	46.5	-4347.3
0.930	136	1783.6	1735.7	-0.9243	-0.9186	157.4	46.0	-3481.0
0.935	136	1662.7	1775.2	-0.9167	-0.9178	148.3	45.5	-3132.6
0.940	137	1775.2	1849.5	-0.9152	-0.9144	139.2	45.0	-3113.7
0.945	137	1849.5	1921.5	-0.9144	-0.9128	131.3	44.5	-3091.4
0.950	137	1921.5	1951.4	-0.9128	-0.9122	124.7	44.0	-2799.1
0.955	137	1951.4	1981.6	-0.9118	-0.9108	115.2	43.5	-2443.2
0.960	137	1981.6	2008.9	-0.9108	-0.9095	119.4	43.0	-2156.7
0.964	137	2008.9	2029.2	-0.9095	-0.9085	126.9	42.5	-1832.1
0.968	137	2029.2	2051.1	-0.9085	-0.9079	115.2	42.0	-1354.4
0.972	137	2051.1	2069.0	-0.9079	-0.9071	104.8	41.5	-1062.9
0.975	137	2069.0	2078.1	-0.9071	-0.9065	92.5	41.0	-925.9
0.979	137	2078.1	2084.5	-0.9065	-0.9057	84.7	40.5	-770.3
0.983	137	2084.5	2097.6	-0.9057	-0.9049	76.9	40.0	-551.4
0.986	137	2097.6	2108.9	-0.9049	-0.9041	68.6	39.5	-476.5
0.989	137	2108.9	2118.0	-0.9041	-0.9034	60.0	39.0	-377.6
0.992	137	2118.0	2122.1	-0.9034	-0.9027	52.3	38.5	-185.1
0.995	137	2122.1	2136.9	-0.9027	-0.9020	43.7	37.0	-61.5
0.998	137	2136.9	2145.0	-0.9020	-0.9017	37.9	36.5	-32.3
0.999	137	2145.0	2153.7	-0.9017	-0.9014	31.6	35.0	-6.2
1.000	137	2153.7	2157.6	-0.9014	-0.9011	21.4	34.5	-49.2
1.000	137	2157.6	2161.7	-0.9011	-0.9005	17.0	33.0	-12.2
1.000	137	2161.7	2169.8	-0.9005	-0.9001	11.7	32.0	0.0
1.000	137	2169.8	2173.0	-0.9001	-0.9001	7.0	31.0	0.0
1.000	137	2173.0	2177.0	-0.9001	-0.9001	3.0	30.0	0.0
1.000	137	2177.0	2181.0	-0.9001	-0.9001	0.0	29.0	0.0
1.000	137	2181.0	2185.0	-0.9001	-0.9001	0.0	28.0	0.0
1.000	137	2185.0	2189.0	-0.9001	-0.9001	0.0	27.0	0.0
1.000	137	2189.0	2193.0	-0.9001	-0.9001	0.0	26.0	0.0
1.000	137	2193.0	2197.0	-0.9001	-0.9001	0.0	25.0	0.0
1.000	137	2197.0	2201.0	-0.9001	-0.9001	0.0	24.0	0.0
1.000	137	2201.0	2205.0	-0.9001	-0.9001	0.0	23.0	0.0

NSWC MP 82-430

FILE NO.=3
 RUN#=82051902 X/D=4.39
 NO.OF POINTS= 27

	X	Y	Z	ALPHA=0	BETA=0	U/U'
1	2.6	2.3	0.6	56.8	56.9	-1351.9
2	3.9	3.9	0.8	56.9	57.0	-2594.4
3	6.6	6.6	0.7	58.2	57.1	-2892.5
4	11.9	12.6	0.7	59.2	59.1	-2764.7
5	23.3	23.7	0.6	60.6	60.7	-2782.2
6	41.7	41.7	0.6	61.3	61.3	-2542.6
7	67.5	67.5	0.4	62.4	62.7	-1987.0
8	108.0	108.0	0.4	63.7	63.7	-1991.7
9	169.7	169.7	0.4	64.7	64.7	-1976.4
10	218.9	218.9	0.3	65.6	65.6	-1567.6
11	292.9	292.9	0.3	66.0	66.0	-1563.0
12	419.4	419.4	0.2	67.4	67.4	-1196.0
13	620.9	620.9	0.2	68.0	68.0	-1325.4
14	823.9	823.9	0.1	69.4	69.4	-309.7
15	1024.9	1024.9	0.1	70.8	70.8	-257.0
16	1225.2	1225.2	0.1	71.7	71.7	-171.0
17	1425.4	1425.4	0.1	72.7	72.7	-13.0
18	1623.4	1623.4	0.1	73.6	73.6	-66.1
19	1821.7	1821.7	0.1	74.5	74.5	-31.2
20	201.1	201.1	0.1	75.4	75.4	-68.9
21	194.8	194.8	0.0	76.2	76.2	-47.5
22	193.7	193.7	0.0	77.0	77.0	-17.1
23	194.8	194.8	0.0	77.8	77.8	-76.1
24	192.6	192.6	0.0	78.6	78.6	-34.0
25	192.2	192.2	0.0	79.4	79.4	-42.4
26	191.6	191.6	0.0	80.2	80.2	-36.4
27	191.1	191.1	0.0	81.0	81.0	-29.1

FILE NO. = 4
RUN# = 82051903
NO. OF POINTS =

X/D = 4.7
26

ALPHA=0
BETA=0

	Y	T0	U	U/A	USD	U/U'
0.025	0.035	0.045	0.055	0.065	0.075	0.085
0.038	0.048	0.058	0.068	0.078	0.088	0.095
0.050	0.060	0.070	0.080	0.090	0.100	0.110
0.062	0.072	0.082	0.092	0.102	0.112	0.122
0.074	0.084	0.094	0.104	0.114	0.124	0.134
0.086	0.096	0.106	0.116	0.126	0.136	0.146
0.100	0.110	0.120	0.130	0.140	0.150	0.160
0.114	0.124	0.134	0.144	0.154	0.164	0.174
0.128	0.138	0.148	0.158	0.168	0.178	0.188
0.142	0.152	0.162	0.172	0.182	0.192	0.202
0.156	0.166	0.176	0.186	0.196	0.206	0.216
0.170	0.180	0.190	0.200	0.210	0.220	0.230
0.184	0.194	0.204	0.214	0.224	0.234	0.244
0.198	0.208	0.218	0.228	0.238	0.248	0.258
0.212	0.222	0.232	0.242	0.252	0.262	0.272
0.226	0.236	0.246	0.256	0.266	0.276	0.286
0.240	0.250	0.260	0.270	0.280	0.290	0.300
0.254	0.264	0.274	0.284	0.294	0.304	0.314
0.268	0.278	0.288	0.298	0.308	0.318	0.328
0.282	0.292	0.302	0.312	0.322	0.332	0.342
0.296	0.306	0.316	0.326	0.336	0.346	0.356
0.310	0.320	0.330	0.340	0.350	0.360	0.370
0.324	0.334	0.344	0.354	0.364	0.374	0.384
0.338	0.348	0.358	0.368	0.378	0.388	0.398
0.352	0.362	0.372	0.382	0.392	0.402	0.412
0.366	0.376	0.386	0.396	0.406	0.416	0.426
0.380	0.390	0.400	0.410	0.420	0.430	0.440
0.394	0.404	0.414	0.424	0.434	0.444	0.454
0.408	0.418	0.428	0.438	0.448	0.458	0.468
0.422	0.432	0.442	0.452	0.462	0.472	0.482
0.436	0.446	0.456	0.466	0.476	0.486	0.496
0.450	0.460	0.470	0.480	0.490	0.500	0.510
0.464	0.474	0.484	0.494	0.504	0.514	0.524
0.478	0.488	0.498	0.508	0.518	0.528	0.538
0.492	0.502	0.512	0.522	0.532	0.542	0.552
0.506	0.516	0.526	0.536	0.546	0.556	0.566
0.520	0.530	0.540	0.550	0.560	0.570	0.580
0.534	0.544	0.554	0.564	0.574	0.584	0.594
0.548	0.558	0.568	0.578	0.588	0.598	0.608
0.562	0.572	0.582	0.592	0.602	0.612	0.622
0.576	0.586	0.596	0.606	0.616	0.626	0.636
0.590	0.600	0.610	0.620	0.630	0.640	0.650
0.604	0.614	0.624	0.634	0.644	0.654	0.664
0.618	0.628	0.638	0.648	0.658	0.668	0.678
0.632	0.642	0.652	0.662	0.672	0.682	0.692
0.646	0.656	0.666	0.676	0.686	0.696	0.706
0.660	0.670	0.680	0.690	0.700	0.710	0.720
0.674	0.684	0.694	0.704	0.714	0.724	0.734
0.688	0.698	0.708	0.718	0.728	0.738	0.748
0.702	0.712	0.722	0.732	0.742	0.752	0.762
0.716	0.726	0.736	0.746	0.756	0.766	0.776
0.730	0.740	0.750	0.760	0.770	0.780	0.790
0.744	0.754	0.764	0.774	0.784	0.794	0.804
0.758	0.768	0.778	0.788	0.798	0.808	0.818
0.772	0.782	0.792	0.802	0.812	0.822	0.832
0.786	0.796	0.806	0.816	0.826	0.836	0.846
0.800	0.810	0.820	0.830	0.840	0.850	0.860
0.814	0.824	0.834	0.844	0.854	0.864	0.874
0.828	0.838	0.848	0.858	0.868	0.878	0.888
0.842	0.852	0.862	0.872	0.882	0.892	0.902
0.856	0.866	0.876	0.886	0.896	0.906	0.916
0.870	0.880	0.890	0.900	0.910	0.920	0.930
0.884	0.894	0.904	0.914	0.924	0.934	0.944
0.898	0.908	0.918	0.928	0.938	0.948	0.958
0.912	0.922	0.932	0.942	0.952	0.962	0.972
0.926	0.936	0.946	0.956	0.966	0.976	0.986
0.940	0.950	0.960	0.970	0.980	0.990	0.999
0.954	0.964	0.974	0.984	0.994	0.999	1.000

NSWC MP 82-430

FILE NO. = 5
 RUN# = 82051904
 NO. OF POINTS = 27
 X/D = 5.25
 Y/Z = 27
 ALPH4=6
 BET4=6

	X	Y	Z	U	V	W	U'	V'	W'
1	-18.7	-23.9	-24.4	-24.4	1.786	1.970	-0.0268	-0.0346	0.0349
2	-23.9	-21.7	-22.2	-22.2	2.199	2.194	-0.0331	-0.0331	0.0331
3	-24.4	-21.7	-22.2	-22.2	2.151	2.104	-0.0346	-0.0346	0.0346
4	-24.4	-21.7	-22.2	-22.2	2.151	2.151	-0.0346	-0.0346	0.0346
5	-19.0	-19.0	-21.6	-21.6	1.95	1.95	-0.0276	-0.0276	0.0276
6	-19.0	-19.0	-21.6	-21.6	1.95	1.95	-0.0276	-0.0276	0.0276
7	-19.0	-19.0	-21.6	-21.6	1.95	1.95	-0.0276	-0.0276	0.0276
8	-19.0	-19.0	-21.6	-21.6	1.95	1.95	-0.0276	-0.0276	0.0276
9	-19.0	-19.0	-21.6	-21.6	1.95	1.95	-0.0276	-0.0276	0.0276
10	-19.0	-19.0	-21.6	-21.6	1.95	1.95	-0.0276	-0.0276	0.0276
11	-19.0	-19.0	-21.6	-21.6	1.95	1.95	-0.0276	-0.0276	0.0276
12	-19.0	-19.0	-21.6	-21.6	1.95	1.95	-0.0276	-0.0276	0.0276
13	-19.0	-19.0	-21.6	-21.6	1.95	1.95	-0.0276	-0.0276	0.0276
14	-19.0	-19.0	-21.6	-21.6	1.95	1.95	-0.0276	-0.0276	0.0276
15	-19.0	-19.0	-21.6	-21.6	1.95	1.95	-0.0276	-0.0276	0.0276
16	-19.0	-19.0	-21.6	-21.6	1.95	1.95	-0.0276	-0.0276	0.0276
17	-19.0	-19.0	-21.6	-21.6	1.95	1.95	-0.0276	-0.0276	0.0276
18	-19.0	-19.0	-21.6	-21.6	1.95	1.95	-0.0276	-0.0276	0.0276
19	-19.0	-19.0	-21.6	-21.6	1.95	1.95	-0.0276	-0.0276	0.0276
20	-19.0	-19.0	-21.6	-21.6	1.95	1.95	-0.0276	-0.0276	0.0276
21	-19.0	-19.0	-21.6	-21.6	1.95	1.95	-0.0276	-0.0276	0.0276
22	-19.0	-19.0	-21.6	-21.6	1.95	1.95	-0.0276	-0.0276	0.0276
23	-19.0	-19.0	-21.6	-21.6	1.95	1.95	-0.0276	-0.0276	0.0276
24	-19.0	-19.0	-21.6	-21.6	1.95	1.95	-0.0276	-0.0276	0.0276
25	-19.0	-19.0	-21.6	-21.6	1.95	1.95	-0.0276	-0.0276	0.0276
26	-19.0	-19.0	-21.6	-21.6	1.95	1.95	-0.0276	-0.0276	0.0276
27	-19.0	-19.0	-21.6	-21.6	1.95	1.95	-0.0276	-0.0276	0.0276

NSWC MP 82-430

FILE NO. = 6
 RUH# = 82051905
 NO. OF POINTS = 27

	X	Y	Z	U	V	W	ALPHABET	BETA	USD	U-U'
1	8.025	14.4	14.4	14.4	14.4	14.4	14.4	14.4	14.4	-4928.7
2	8.035	14.4	14.4	14.4	14.4	14.4	14.4	14.4	14.4	-4156.7
3	8.045	14.4	14.4	14.4	14.4	14.4	14.4	14.4	14.4	-3621.4
4	8.055	14.4	14.4	14.4	14.4	14.4	14.4	14.4	14.4	-3467.5
5	8.065	14.4	14.4	14.4	14.4	14.4	14.4	14.4	14.4	-2826.1
6	8.075	14.4	14.4	14.4	14.4	14.4	14.4	14.4	14.4	-2372.1
7	8.085	14.4	14.4	14.4	14.4	14.4	14.4	14.4	14.4	-1844.5
8	8.095	14.4	14.4	14.4	14.4	14.4	14.4	14.4	14.4	-1796.1
9	8.105	14.4	14.4	14.4	14.4	14.4	14.4	14.4	14.4	-1522.1
10	8.115	14.4	14.4	14.4	14.4	14.4	14.4	14.4	14.4	-1516.1
11	8.125	14.4	14.4	14.4	14.4	14.4	14.4	14.4	14.4	-1419.1
12	8.135	14.4	14.4	14.4	14.4	14.4	14.4	14.4	14.4	-1398.7
13	8.145	14.4	14.4	14.4	14.4	14.4	14.4	14.4	14.4	-1287.5
14	8.155	14.4	14.4	14.4	14.4	14.4	14.4	14.4	14.4	-2372.1
15	8.165	14.4	14.4	14.4	14.4	14.4	14.4	14.4	14.4	-1871.1
16	8.175	14.4	14.4	14.4	14.4	14.4	14.4	14.4	14.4	-1522.1
17	8.185	14.4	14.4	14.4	14.4	14.4	14.4	14.4	14.4	-1516.1
18	8.195	14.4	14.4	14.4	14.4	14.4	14.4	14.4	14.4	-1419.1
19	8.205	14.4	14.4	14.4	14.4	14.4	14.4	14.4	14.4	-1398.7
20	8.215	14.4	14.4	14.4	14.4	14.4	14.4	14.4	14.4	-1287.5
21	8.225	14.4	14.4	14.4	14.4	14.4	14.4	14.4	14.4	-2372.1
22	8.235	14.4	14.4	14.4	14.4	14.4	14.4	14.4	14.4	-1871.1
23	8.245	14.4	14.4	14.4	14.4	14.4	14.4	14.4	14.4	-1522.1
24	8.255	14.4	14.4	14.4	14.4	14.4	14.4	14.4	14.4	-1516.1
25	8.265	14.4	14.4	14.4	14.4	14.4	14.4	14.4	14.4	-1419.1
26	8.275	14.4	14.4	14.4	14.4	14.4	14.4	14.4	14.4	-1398.7
27	8.285	14.4	14.4	14.4	14.4	14.4	14.4	14.4	14.4	-1287.5

NSWC MP 82-430

FILE NO. = RUM# = 82051906 NO. OF POINTS =		X/D = 4.39 25	ALPHA=2		BETA=0	
Y	T0	U	U/A	USD	U/U	USD
0.025	145	1274.2	3.8	281.1	52.7	-2552.8
0.035	145	1392.9	8.3	0.0054	53.4	-2235.7
0.040	145	1416.0	13.7	0.0115	181.7	-2377.9
0.045	145	1450.6	21.0	0.0191	182.1	-2425.2
0.050	145	1488.0	27.1	0.0292	187.1	-2762.8
0.055	145	1519.4	33.2	0.0377	186.2	-2566.2
0.060	145	1455.9	42.1	0.0462	185.1	-2189.8
0.065	145	1559.1	48.3	0.0531	181.5	-1990.4
0.070	145	1621.4	57.9	0.0594	173.1	-1712.1
0.075	145	1714.2	63.4	0.0681	171.5	-2032.4
0.080	145	1746.2	67.4	0.0743	173.0	-1568.0
0.085	145	1798.7	74.4	0.0807	169.6	-1746.6
0.090	145	1836.0	84.0	0.0884	167.5	-1803.8
0.095	145	1898.0	92.0	0.0948	162.5	-1655.9
0.100	145	1955.7	100.0	0.1045	163.4	-1486.6
0.110	145	1998.7	109.0	0.1093	161.4	-1640.6
0.120	145	2048.0	118.2	0.1182	152.7	-1371.5
0.130	145	2098.0	129.1	0.1291	143.4	-987.4
0.140	145	2145.7	139.0	0.1390	124.8	-730.4
0.150	145	2192.0	149.0	0.1490	124.7	-487.2
0.160	145	2237.2	159.0	0.1590	117.0	-256.1
0.170	145	2282.0	169.0	0.1690	117.0	-232.1
0.180	145	2327.3	179.0	0.1790	117.0	-189.9
0.190	145	2370.6	189.0	0.1890	117.0	-159.9
0.200	145	2412.6	199.0	0.1990	117.0	-118.5

FILE NO.=8
RUN# =82051987
NO. OF POINTS=

X/D=4.7
25

ALPHA=2

BETA=0

Y	T0	U	V	U/A	U/V	USD	USD	U/V
0. 039	145	1430.4	-74.6	1.994	-0. 1040	152.3	56.9	-5155.7
0. 035	145	1463.4	-73.6	2.040	-0. 1026	148.2	56.9	-4757.6
0. 040	145	1500.5	-71.5	2.092	-0. 0997	136.6	52.7	-3903.0
0. 045	145	1529.8	-70.4	2.133	-0. 0981	126.0	51.7	-3088.9
0. 050	145	1559.0	-70.6	2.173	-0. 0984	123.3	50.7	-2962.7
0. 055	145	1586.4	-69.3	2.211	-0. 0967	117.3	50.7	-2619.2
0. 060	145	1618.3	-76.0	2.256	-0. 1060	107.1	51.6	-2270.5
0. 065	145	1637.4	-75.5	2.283	-0. 1053	104.3	50.8	-2089.5
0. 070	145	1660.5	-77.3	2.315	-0. 1097	105.6	50.8	-1967.5
0. 075	145	1675.4	-78.7	2.335	-0. 1084	105.2	49.8	-1893.5
0. 080	145	1696.7	-77.8	2.365	-0. 1084	105.0	49.7	-1985.9
0. 085	145	1717.0	-79.0	2.394	-0. 1181	106.0	49.6	-1967.1
0. 090	145	1735.4	-81.1	2.419	-0. 1111	104.7	46.6	-1845.2
0. 095	145	1751.4	-82.7	2.441	-0. 1104	104.7	46.6	-1614.2
0. 100	145	1769.0	-85.2	2.471	-0. 1107	105.2	46.6	-1674.8
0. 105	145	1785.6	-85.2	2.522	-0. 1107	105.0	46.6	-1653.9
0. 110	145	1803.0	-87.7	2.589	-0. 1123	112.7	42.2	-1463.4
0. 115	145	1819.6	-87.7	2.625	-0. 1123	115.1	42.2	-1463.4
0. 120	145	1836.4	-87.7	2.675	-0. 1188	111.2	42.2	-1463.4
0. 125	145	1856.4	-85.2	2.748	-0. 1188	105.5	43.2	-1342.6
0. 130	145	1876.4	-85.2	2.792	-0. 1056	99.6	40.7	-1342.6
0. 135	145	1896.0	-85.2	2.822	-0. 0822	93.6	35.7	-381.9
0. 140	145	1916.0	-85.2	2.878	-0. 0822	89.0	34.0	-286.4
0. 145	145	1936.4	-85.2	2.903	-0. 0822	86.0	34.0	-286.4
0. 150	145	1956.4	-85.2	2.924	-0. 0822	82.0	30.7	-168.1
0. 155	145	1976.4	-85.2	2.944	-0. 0822	78.0	30.7	-168.1
0. 160	145	1996.4	-85.2	2.964	-0. 0822	74.0	30.7	-168.1
0. 165	145	2016.4	-85.2	2.984	-0. 0822	70.0	30.7	-168.1
0. 170	145	2036.4	-85.2	3.004	-0. 0822	66.0	30.7	-168.1
0. 175	145	2056.4	-85.2	3.024	-0. 0822	62.0	30.7	-168.1
0. 180	145	2076.4	-85.2	3.044	-0. 0822	58.0	30.7	-168.1
0. 185	145	2096.4	-85.2	3.064	-0. 0822	54.0	30.7	-168.1
0. 190	145	2116.4	-85.2	3.084	-0. 0822	50.0	30.7	-168.1
0. 195	145	2136.4	-85.2	3.104	-0. 0822	46.0	30.7	-168.1
0. 200	145	2156.4	-85.2	3.124	-0. 0822	42.0	30.7	-168.1

NSWC MP 82-430

FILE NO.=9	RUN# = 92051908	X/D=5.25	ALPHA=2	BETA=0
NO. OF POINTS=				
U	U	U/A	USD	USD
-22.3	-22.3	-0.0311	51.7	54.2
-19.5	-19.5	-0.0271	56.8	56.9
-17.3	-17.3	-0.0241	58.2	55.2
-14.12.6	-14.12.6	-0.0209	55.6.1	55.6.1
-14.41.4	-14.41.4	-0.0195	55.0	55.0
-14.73.2.8	-14.73.2.8	-0.0187	55.5.5	55.5.5
-15.04.5.6.2	-15.04.5.6.2	-0.0179	55.9.5.5	55.9.5.5
-15.35.6.2.5.5	-15.35.6.2.5.5	-0.0178	56.4.5.5	56.4.5.5
-15.68.5.6.2	-15.68.5.6.2	-0.0178	56.9.5.5	56.9.5.5
-16.09.6.5.7	-16.09.6.5.7	-0.0178	57.4.5.5	57.4.5.5
-16.37.7.8	-16.37.7.8	-0.0178	57.9.5.5	57.9.5.5
-16.67.8.4	-16.67.8.4	-0.0178	58.4.5.5	58.4.5.5
-16.97.9.4	-16.97.9.4	-0.0178	58.9.5.5	58.9.5.5
-17.26.0.4	-17.26.0.4	-0.0178	59.4.5.5	59.4.5.5
-17.55.9.4	-17.55.9.4	-0.0178	59.9.5.5	59.9.5.5
-17.85.5.5	-17.85.5.5	-0.0178	60.4.5.5	60.4.5.5
-18.12.5.5	-18.12.5.5	-0.0178	60.9.5.5	60.9.5.5
-18.39.5.5	-18.39.5.5	-0.0178	61.4.5.5	61.4.5.5
-18.67.5.5	-18.67.5.5	-0.0178	61.9.5.5	61.9.5.5
-19.04.5.5	-19.04.5.5	-0.0178	62.4.5.5	62.4.5.5
-19.41.5.5	-19.41.5.5	-0.0178	62.9.5.5	62.9.5.5
-19.77.5.5	-19.77.5.5	-0.0178	63.4.5.5	63.4.5.5
-20.12.5.5	-20.12.5.5	-0.0178	63.9.5.5	63.9.5.5
-20.47.5.5	-20.47.5.5	-0.0178	64.4.5.5	64.4.5.5
-20.82.5.5	-20.82.5.5	-0.0178	64.9.5.5	64.9.5.5
-21.18.5.5	-21.18.5.5	-0.0178	65.4.5.5	65.4.5.5
-21.55.5.5	-21.55.5.5	-0.0178	65.9.5.5	65.9.5.5
-21.92.5.5	-21.92.5.5	-0.0178	66.4.5.5	66.4.5.5
-22.29.5.5	-22.29.5.5	-0.0178	66.9.5.5	66.9.5.5
-22.66.5.5	-22.66.5.5	-0.0178	67.4.5.5	67.4.5.5
-23.03.5.5	-23.03.5.5	-0.0178	67.9.5.5	67.9.5.5
-23.40.5.5	-23.40.5.5	-0.0178	68.4.5.5	68.4.5.5
-23.77.5.5	-23.77.5.5	-0.0178	68.9.5.5	68.9.5.5
-24.14.5.5	-24.14.5.5	-0.0178	69.4.5.5	69.4.5.5
-24.51.5.5	-24.51.5.5	-0.0178	69.9.5.5	69.9.5.5
-24.88.5.5	-24.88.5.5	-0.0178	70.4.5.5	70.4.5.5
-25.25.5.5	-25.25.5.5	-0.0178	70.9.5.5	70.9.5.5
-25.62.5.5	-25.62.5.5	-0.0178	71.4.5.5	71.4.5.5
-26.00.5.5	-26.00.5.5	-0.0178	71.9.5.5	71.9.5.5
-26.37.5.5	-26.37.5.5	-0.0178	72.4.5.5	72.4.5.5
-26.74.5.5	-26.74.5.5	-0.0178	72.9.5.5	72.9.5.5
-27.11.5.5	-27.11.5.5	-0.0178	73.4.5.5	73.4.5.5
-27.48.5.5	-27.48.5.5	-0.0178	73.9.5.5	73.9.5.5
-27.85.5.5	-27.85.5.5	-0.0178	74.4.5.5	74.4.5.5
-28.22.5.5	-28.22.5.5	-0.0178	74.9.5.5	74.9.5.5
-28.59.5.5	-28.59.5.5	-0.0178	75.4.5.5	75.4.5.5
-28.96.5.5	-28.96.5.5	-0.0178	75.9.5.5	75.9.5.5
-29.33.5.5	-29.33.5.5	-0.0178	76.4.5.5	76.4.5.5
-29.70.5.5	-29.70.5.5	-0.0178	76.9.5.5	76.9.5.5
-30.07.5.5	-30.07.5.5	-0.0178	77.4.5.5	77.4.5.5
-30.44.5.5	-30.44.5.5	-0.0178	77.9.5.5	77.9.5.5
-30.81.5.5	-30.81.5.5	-0.0178	78.4.5.5	78.4.5.5
-31.18.5.5	-31.18.5.5	-0.0178	78.9.5.5	78.9.5.5
-31.55.5.5	-31.55.5.5	-0.0178	79.4.5.5	79.4.5.5
-31.92.5.5	-31.92.5.5	-0.0178	79.9.5.5	79.9.5.5
-32.29.5.5	-32.29.5.5	-0.0178	80.4.5.5	80.4.5.5
-32.66.5.5	-32.66.5.5	-0.0178	80.9.5.5	80.9.5.5
-33.03.5.5	-33.03.5.5	-0.0178	81.4.5.5	81.4.5.5
-33.40.5.5	-33.40.5.5	-0.0178	81.9.5.5	81.9.5.5
-33.77.5.5	-33.77.5.5	-0.0178	82.4.5.5	82.4.5.5
-34.14.5.5	-34.14.5.5	-0.0178	82.9.5.5	82.9.5.5
-34.51.5.5	-34.51.5.5	-0.0178	83.4.5.5	83.4.5.5
-34.88.5.5	-34.88.5.5	-0.0178	83.9.5.5	83.9.5.5
-35.25.5.5	-35.25.5.5	-0.0178	84.4.5.5	84.4.5.5
-35.62.5.5	-35.62.5.5	-0.0178	84.9.5.5	84.9.5.5
-36.00.5.5	-36.00.5.5	-0.0178	85.4.5.5	85.4.5.5
-36.37.5.5	-36.37.5.5	-0.0178	85.9.5.5	85.9.5.5
-36.74.5.5	-36.74.5.5	-0.0178	86.4.5.5	86.4.5.5
-37.11.5.5	-37.11.5.5	-0.0178	86.9.5.5	86.9.5.5
-37.48.5.5	-37.48.5.5	-0.0178	87.4.5.5	87.4.5.5
-37.85.5.5	-37.85.5.5	-0.0178	87.9.5.5	87.9.5.5
-38.22.5.5	-38.22.5.5	-0.0178	88.4.5.5	88.4.5.5
-38.59.5.5	-38.59.5.5	-0.0178	88.9.5.5	88.9.5.5
-39.33.5.5	-39.33.5.5	-0.0178	89.4.5.5	89.4.5.5
-39.60.5.5	-39.60.5.5	-0.0178	89.9.5.5	89.9.5.5
-39.87.5.5	-39.87.5.5	-0.0178	90.4.5.5	90.4.5.5
-40.14.5.5	-40.14.5.5	-0.0178	90.9.5.5	90.9.5.5
-40.41.5.5	-40.41.5.5	-0.0178	91.4.5.5	91.4.5.5
-40.68.5.5	-40.68.5.5	-0.0178	91.9.5.5	91.9.5.5
-40.95.5.5	-40.95.5.5	-0.0178	92.4.5.5	92.4.5.5
-41.22.5.5	-41.22.5.5	-0.0178	92.9.5.5	92.9.5.5
-41.49.5.5	-41.49.5.5	-0.0178	93.4.5.5	93.4.5.5
-41.76.5.5	-41.76.5.5	-0.0178	93.9.5.5	93.9.5.5
-42.03.5.5	-42.03.5.5	-0.0178	94.4.5.5	94.4.5.5
-42.30.5.5	-42.30.5.5	-0.0178	94.9.5.5	94.9.5.5
-42.57.5.5	-42.57.5.5	-0.0178	95.4.5.5	95.4.5.5
-42.84.5.5	-42.84.5.5	-0.0178	95.9.5.5	95.9.5.5
-43.11.5.5	-43.11.5.5	-0.0178	96.4.5.5	96.4.5.5
-43.38.5.5	-43.38.5.5	-0.0178	96.9.5.5	96.9.5.5
-43.65.5.5	-43.65.5.5	-0.0178	97.4.5.5	97.4.5.5
-43.92.5.5	-43.92.5.5	-0.0178	97.9.5.5	97.9.5.5
-44.19.5.5	-44.19.5.5	-0.0178	98.4.5.5	98.4.5.5
-44.46.5.5	-44.46.5.5	-0.0178	98.9.5.5	98.9.5.5
-44.73.5.5	-44.73.5.5	-0.0178	99.4.5.5	99.4.5.5
-45.00.5.5	-45.00.5.5	-0.0178	99.9.5.5	99.9.5.5
-45.27.5.5	-45.27.5.5	-0.0178	100.4.5.5	100.4.5.5
-45.54.5.5	-45.54.5.5	-0.0178	100.9.5.5	100.9.5.5
-45.81.5.5	-45.81.5.5	-0.0178	101.4.5.5	101.4.5.5
-46.08.5.5	-46.08.5.5	-0.0178	101.9.5.5	101.9.5.5
-46.35.5.5	-46.35.5.5	-0.0178	102.4.5.5	102.4.5.5
-46.62.5.5	-46.62.5.5	-0.0178	102.9.5.5	102.9.5.5
-46.89.5.5	-46.89.5.5	-0.0178	103.4.5.5	103.4.5.5
-47.16.5.5	-47.16.5.5	-0.0178	103.9.5.5	103.9.5.5
-47.43.5.5	-47.43.5.5	-0.0178	104.4.5.5	104.4.5.5
-47.70.5.5	-47.70.5.5	-0.0178	104.9.5.5	104.9.5.5
-47.97.5.5	-47.97.5.5	-0.0178	105.4.5.5	105.4.5.5
-48.24.5.5	-48.24.5.5	-0.0178	105.9.5.5	105.9.5.5
-48.51.5.5	-48.51.5.5	-0.0178	106.4.5.5	106.4.5.5
-48.78.5.5	-48.78.5.5	-0.0178	106.9.5.5	106.9.5.5
-49.05.5.5	-49.05.5.5	-0.0178	107.4.5.5	107.4.5.5
-49.32.5.5	-49.32.5.5	-0.0178	107.9.5.5	107.9.5.5
-49.59.5.5	-49.59.5.5	-0.0178	108.4.5.5	108.4.5.5
-49.86.5.5	-49.86.5.5	-0.0178	108.9.5.5	108.9.5.5
-50.13.5.5	-50.13.5.5	-0.0178	109.4.5.5	109.4.5.5
-50.40.5.5	-50.40.5.5	-0.0178	109.9.5.5	109.9.5.5
-50.67.5.5	-50.67.5.5	-0.0178	110.4.5.5	110.4.5.5
-50.94.5.5	-50.94.5.5	-0.0178	110.9.5.5	110.9.5.5
-51.21.5.5	-51.21.5.5	-0.0178	111.4.5.5	111.4.5.5
-51.48.5.5	-51.48.5.5	-0.0178	111.9.5.5	111.9.5.5
-51.75.5.5	-51.75.5.5	-0.0178	112.4.5.5	112.4.5.5
-52.02.5.5	-52.02.5.5	-0.0178	112.9.5.5	112.9.5.5
-52.29.5.5	-52.29.5.5	-0.0178	113.4.5.5	113.4.5.5
-52.56.5.5	-52.56.5.5	-0.0178	113.9.5.5	113.9.5.5
-52.83.5.5	-52.83.5.5	-0.0178	114.4.5.5	114.4.5.5
-53.10.5.5	-53.10.5.5	-0.0178	114.9.5.5	114.9.5.5
-53.37.5.5	-53.37.5.5	-0.0178	115.4.5.5	115.4.5.5
-53.64.5.5	-53.64.5.5	-0.0178	115.9.5.5	115.9.5.5
-53.91.5.5	-53.91.5.5	-0.0178	116.4.5.5	116.4.5.5
-54.18.5.5	-54.18.5.5	-0.0178	116.9.5.5	116.9.5.5
-54.45.5.5	-54.45.5.5	-0.0178	117.4.5.5	117.4.5.5
-54.72.5.5	-54.72.5.5	-0.0178	117.9.5.5	117.9.5.5
-55.00.5.5	-55.00.5.5	-0.0178	118.4.5.5	118.4.5.5
-55.27.5.5	-55.27.5.5	-0.0178	118.9.5.5	118.9.5.5
-55.54.5.5	-55.54.5.5	-0.0178	119.4.5.5	119.4.5.5
-55.81.5.5	-55.81.5.5	-0.0178	119.9.5.5	119.9.5.5
-56.08.5.5	-56.08.5.5	-0.0178	120.4.5.5	120.4.5.5
-56.35.5.5	-56.35.5.5	-0.0178	120.9.5.5	120.9.5.5
-56.62.5.5	-56.62.5.5	-0.0178	121.4.5.5	121.4.5.5
-56.89.5.5	-56.89.5.5	-0.0178	121.9.5.5	121.9.5.5
-57.16.5.5	-57.16.5.5	-0.0178	122.4.5.5	122.4.5.5
-57.43.5.5	-57.43.5.5	-0.0178	122.9.5.5	122.9.5.5
-57.70.5.5	-57.70.5.5	-0.0178	123.4.5.5	123.4.5.5
-57.97.5.5	-57.97.5.5	-0.0178	123.9.5.5	123.9.5.5
-58.24.5.5	-58.24.5.5	-0.0178	124.4.5.5	124.4.5.5
-58.51.5.5	-58.51.5.5	-0.0178	124.9.5.5	124.9.5.5
-58.78.5.5	-58.78.5.5	-0.0178	125.4.5.5	125.4.5.5
-59.05.5.5	-59.05.5.5	-0.0178	125.9.5.5	125.9.5.5
-59.32.5.5	-59.32.5.5	-0.0178	126.4.5.5	126.4.5.5
-59.59.5.5	-59.59.5.5	-0.0178	126.9.5.5	126.9.5.5
-59.86.5.5	-59.86.5.5	-0.0178	127.4.5.5	127.4.5.5
-60.13.5.5	-60.13.5.5	-0.0178	127.9.5.5	127.9.5.5
-60.40.5.5	-60.40.5.5	-0.0178	128.4.5.5	128.4.5.5
-60.67.5.5	-60.67.5.5	-0.0178	128.9.5.5	128.9.5.5
-60.94.5.5	-60.94.5.5	-0.0178	129.4.5.5	129.4.5.5
-61.21.5.5	-61.21.5.5	-0.0178	129.9.5.5	129.9.5.5
-61.48.5.5	-61.48.5.5	-0.0178	130.4.5.5	130.4.5.5
-61.75.5.5	-61.75.5.5	-0.0178	130.9.5.5	130.9.5.5
-62.02.5.5	-62.02.5.5	-0.0178	131.4.5.5	131.4.5.5
-62.29.5.5	-62.29.5.5	-0.0178	131.9.5.5	131.9.5.5
-62.56.5.5	-62.56.5.5	-0.0178	132.4.5.5	132.4.5.5
-62.83.5.5	-62.83.5.5	-0.0178	132.9.5.5	132.9.5.5
-63.10.5.5	-63.10.5.5	-0.0178	133.4.5.5	133.4.5.5
-63.37.5.5	-63.37.5.5	-0.0178	133.9.5.5	133.9.5.5
-63.64.5.5	-63.64.5.5	-0.0178	134.4.5.5	134.4.5.5
-63.91.5.5	-63.91.5.5	-0.0178	134.9.5.5	134.9.5.5
-64.18.5.5	-64.18.5.5	-0.0178	135.4.5.5	135.4.5.5
-64.45.5.5	-64.45.5.5	-0.0178	135.9.5.5	135.9.5.5
-64.72.5.5	-64.72.5.5	-0.0178	136.4.5.5	136.4.5.5
-65.00.5.5	-65.00.5.5	-0.0178	136.9.5.5	136.9.5.5
-65.27.5.5	-65.27.5.5	-0.0178	137.4.5.5	137.4.5.5
-65.54.5.5	-65.54.5.5	-0.0178	137.9.5.5	137.9.5.5
-65.81.5.5	-65.81.5.5	-0.0178	138.4.5.5	

FILE NO.=10
RUN# = 82951909
NO. OF POINTS =

X/D=4
22

ALPHA=-2

BETA=0

Y	T0	U	V/A	U/A	USD	U-U'
0.020	1.45	1528.6	-0.0352	230.9	48.7	-5552.9
0.025	1.45	1637.9	-0.0392	175.6	48.8	-4118.4
0.030	1.45	1691.4	-0.0365	169.3	49.5	-3961.3
0.035	1.45	1742.1	-0.0323	157.4	49.4	-3586.7
0.040	1.45	1789.8	-0.0312	148.3	47.7	-3229.1
0.045	1.45	1824.6	-0.0301	144.3	46.5	-2998.8
0.050	1.45	1867.8	-0.0269	143.8	46.4	-2897.6
0.055	1.45	1912.6	-0.0285	133.7	42.1	-2391.8
0.060	1.45	1957.6	-0.0277	118.4	39.9	-1934.7
0.065	1.45	1987.7	-0.0261	111.8	41.2	-1518.4
0.070	1.45	2023.7	-0.0240	93.6	38.2	-1073.2
0.075	1.45	2051.3	-0.0228	80.5	37.8	-903.7
0.080	1.45	2074.6	-0.0214	68.6	37.4	-496.4
0.085	1.45	2093.6	-0.0193	63.4	47.4	-507.7
0.090	1.45	2117.7	-0.0171	64.6	47.4	-254.7
0.095	1.45	2126.6	-0.0165	61.8	47.4	-202.0
0.100	1.45	2127.9	-0.0146	61.9	47.4	-194.6
0.110	1.45	2151.4	-0.0129	60.9	47.4	-78.7
0.120	1.45	2158.5	-0.0109	62.3	47.4	-37.3
0.130	1.45	2162.1	-0.0144	61.6	47.4	-47.4
0.140	1.45	2165.1	-0.0168	61.8	47.4	-23.4

FILE NO.=11
RUN#=82051910
NO. OF POINTS= 21

X/D=4.39

MLPHH=-2

BETA=0

Y	T0	U	U	V/A	USD	USD	U/V	-
0.025	145	145	145	0.0054	0.0003	176.0	184.8	-2161.3
0.030	145	145	145	0.0054	0.0120	183.2	183.6	-2679.0
0.035	145	145	145	0.0054	0.0218	183.6	183.6	-2514.6
0.040	145	145	145	0.0054	0.0304	183.5	183.5	-2573.8
0.045	145	145	145	0.0054	0.0385	184.1	184.1	-2416.6
0.050	145	145	145	0.0054	0.0482	184.7	184.7	-2126.8
0.055	145	145	145	0.0054	0.0582	192.0	192.0	-2119.1
0.060	145	145	145	0.0054	0.0685	192.7	192.7	-1827.1
0.065	145	145	145	0.0054	0.0785	192.7	192.7	-1858.0
0.070	145	145	145	0.0054	0.0885	192.7	192.7	-1564.6
0.075	145	145	145	0.0054	0.0985	192.7	192.7	-1211.6
0.080	145	145	145	0.0054	0.1085	192.7	192.7	-1268.0
0.085	145	145	145	0.0054	0.1185	192.7	192.7	-1010.1
0.090	145	145	145	0.0054	0.1285	192.7	192.7	-576.3
0.095	145	145	145	0.0054	0.1385	192.7	192.7	-483.7
0.100	145	145	145	0.0054	0.1485	192.7	192.7	-243.1
0.105	145	145	145	0.0054	0.1585	192.7	192.7	-144.6
0.110	145	145	145	0.0054	0.1685	192.7	192.7	-41.9
0.115	145	145	145	0.0054	0.1785	192.7	192.7	-12.6
0.120	145	145	145	0.0054	0.1885	192.7	192.7	-1.1

FILE NO. = 12
RUN# = 82051911
NO. OF POINTS =

X/D = 4.7
Z1

BETA=0

ALPHA=-2

Y	T0	U	V/A	U/A	USD	USD	UV	NSWC MP 82-430
9.025	145	1559.8	-95.7	-0.1334	152.2	57.9	-5049.5	
9.030	145	1614.4	-94.7	-0.1320	129.6	54.6	-3700.0	
9.035	145	1645.3	-93.7	-0.1306	120.7	53.5	-3201.2	
9.040	145	1679.2	-92.8	-0.1293	117.8	54.1	-2958.8	
9.045	145	1706.4	-91.1	-0.1270	109.9	51.8	-2607.6	
9.050	145	1726.0	-93.3	-0.1300	104.7	49.2	-2113.4	
9.055	145	1750.6	-95.6	-0.1303	108.3	47.7	-2228.0	
9.060	145	1772.0	-97.1	-0.1333	107.1	46.2	-2187.9	
9.065	145	1799.4	-98.6	-0.1333	106.1	46.6	-1883.2	
9.070	145	1822.7	-97.4	-0.1333	106.7	47.0	-2037.4	
9.075	145	1845.5	-95.9	-0.1333	106.7	42.9	-1947.6	
9.080	145	1868.0	-97.1	-0.1333	106.7	42.9	-1719.1	
9.085	145	1892.7	-98.2	-0.1333	106.7	43.0	-1864.0	
9.090	145	1916.7	-97.4	-0.1333	106.7	41.0	-1653.7	
9.095	145	1940.7	-96.7	-0.1333	106.7	41.0	-1666.7	
9.100	145	1964.7	-95.9	-0.1333	106.7	41.0	-1419.7	
9.110	145	1987.4	-96.7	-0.1333	106.7	41.0	-1674.8	
9.120	145	2010.1	-96.7	-0.1333	106.7	41.0	-1666.4	
9.130	145	2033.0	-96.7	-0.1333	106.7	41.0	-544.3	
9.140	145	2055.7	-96.7	-0.1333	106.7	41.0	-278.1	
9.150	145	2078.4	-96.7	-0.1333	106.7	41.0	-188.1	

FILE NO.=13
RUN#=92051912
NO. OF POINTS=

X/D=5.25
21

ALPHA=-2
BETA=0

Y	T0	U	V	U/A	USD	U/U'
0.025	145.0	145.0	-24.0	2.013	254.3	-8699.9
0.030	145.5	145.5	-33.0	2.160	254.3	-6751.4
0.040	145.0	145.0	-28.9	2.203	194.5	-6816.5
0.045	145.5	145.5	-31.1	2.270	194.5	-5710.7
0.050	145.0	145.0	-27.5	2.317	158.5	-4571.0
0.055	145.5	145.5	-27.2	2.367	158.5	-5333.3
0.060	145.0	145.0	-30.1	2.415	156.0	-4782.1
0.065	145.5	145.5	-30.1	2.479	156.0	-5005.2
0.070	145.0	145.0	-30.1	2.531	155.4	-5232.9
0.075	145.5	145.5	-30.1	2.573	155.4	-4635.2
0.080	145.0	145.0	-30.1	2.625	155.4	-4118.1
0.085	145.5	145.5	-30.1	2.677	155.4	-5232.9
0.090	145.0	145.0	-30.1	2.729	155.4	-4660.7
0.095	145.5	145.5	-30.1	2.781	155.4	-2238.9
0.100	145.0	145.0	-30.1	2.833	155.4	-1695.7
0.110	145.5	145.5	-30.1	2.885	155.4	-1449.6
0.120	145.0	145.0	-30.1	2.937	155.4	-534.0
0.130	145.5	145.5	-30.1	2.989	155.4	-295.9
0.140	145.0	145.0	-30.1	3.041	155.4	-115.6
0.150	145.5	145.5	-30.1	3.093	155.4	-

FILE NO.=14
RUN# = 92051913
NO. OF POINTS = 26

ALPHA=0

BETA=0

Y	TG	U	V/A	USD	VSD	UV/U'	
0.025	139	1288.5	1.942	0.0347	55.8	-641.6	
0.030	140	1297.8	1.941	0.0262	61.8	-481.3	
0.035	140	1410.4	1.973	0.0220	60.8	-1482.9	
0.040	140	1438.2	2.040	0.0467	61.8	-1412.8	
0.045	140	1458.7	2.076	0.0585	62.5	-1296.7	
0.050	140	1483.6	2.111	0.0749	59.5	-1098.2	
0.055	140	1503.8	2.159	0.0827	58.7	-705.9	
0.060	140	1543.7	2.201	0.0947	56.6	-679.9	
0.065	140	1572.8	2.248	0.1044	54.7	-984.4	
0.070	140	1601.9	2.295	0.1165	52.7	-751.4	
0.075	140	1641.1	2.341	0.1302	50.7	-549.4	
0.080	140	1675.1	2.387	0.1416	48.7	-365.4	
0.085	140	1714.2	2.434	0.1518	46.7	-244.4	
0.090	140	1752.2	2.481	0.1704	44.7	-175.4	
0.095	140	1794.2	2.529	0.1847	42.7	-126.4	
0.100	140	1845.2	2.575	0.2016	40.7	-84.4	
0.105	140	1894.2	2.612	0.2184	38.7	-42.4	
0.110	140	1943.2	2.649	0.2349	36.7	-22.4	
0.115	140	1992.2	2.686	0.2503	34.7	-12.4	
0.120	140	2041.2	2.723	0.2657	32.7	-2.4	
0.125	140	2090.2	2.759	0.2809	30.7	-1.4	
0.130	140	2139.2	2.796	0.2951	28.7	-0.4	
0.135	140	2188.2	2.833	0.3093	26.7	-0.4	
0.140	140	2237.2	2.869	0.3235	24.7	-0.4	
0.145	140	2286.2	2.906	0.3377	22.7	-0.4	
0.150	140	2335.2	2.943	0.3519	20.7	-0.4	
0.155	140	2384.2	2.979	0.3659	18.7	-0.4	
0.160	140	2433.2	3.016	0.3799	16.7	-0.4	
0.165	140	2482.2	3.053	0.3939	14.7	-0.4	
0.170	140	2531.2	3.089	0.4079	12.7	-0.4	
0.175	140	2580.2	3.126	0.4219	10.7	-0.4	
0.180	140	2629.2	3.163	0.4359	8.7	-0.4	
0.185	140	2678.2	3.199	0.4499	6.7	-0.4	
0.190	140	2727.2	3.236	0.4639	4.7	-0.4	
0.195	140	2776.2	3.273	0.4779	2.7	-0.4	
0.200	140	2825.2	3.309	0.4919	0.7	-0.4	

NSWC MP 82-430

FILE NO.=15
 RUN# =82051914
 NO. OF POINTS = 4
 FREESTREAM
 KLFH4=0
 BETAH=0
 U' U/A
 Y T0 U V U/A V/A V/A V/A V/A V/A V/A V/A V/A
 0.200 141 2158.9 -6.9 3.020 -0.0096 0.0 42.7 -26.1
 0.200 141 2156.6 -8.6 3.016 -0.0120 16.4 21.3 10.6
 0.200 141 2156.3 -9.3 3.016 -0.0130 13.7 18.5 -3.9
 0.200 141 2155.6 -9.3 3.015 -0.0130 15.6 24.2 36.0

NSWC MP 82-430

FILE NO.=16 PUN# =82952001 NO. OF POINTS= 26		ALPHA=0 BETA=0		U/U		USD		U/U		USD		U/U		USD		U/U		USD	
0.025	129	124	129	U	T6	U	U	1.986	-0.2864	112.1	43.6	-2775.2	-1854.8	112.1	43.6	-2775.2	-1854.8	112.1	43.6
0.038	124	129	130	U	U	U/A	U/A	-2.049	-0.2898	119.7	42.7	-1475.0	-1254.7	126.9	45.1	-1475.0	-1254.7	126.9	45.1
0.049	125	129	131	U	U	U/A	U/A	-2.148	-0.2841	121.4	41.2	-1039.0	-885.5	117.2	39.4	-1039.0	-885.5	117.2	39.4
0.055	129	129	132	U	U	U/A	U/A	-2.192	-0.2860	117.2	41.2	-928.0	-736.8	111.8	38.1	-928.0	-736.8	111.8	38.1
0.060	130	132	132	U	U	U/A	U/A	-2.272	-0.2890	117.2	41.2	-610.1	-665.8	106.2	38.1	-610.1	-665.8	106.2	38.1
0.065	131	131	131	U	U	U/A	U/A	-2.296	-0.2884	111.8	39.4	-547.2	-564.6	106.2	38.1	-547.2	-564.6	106.2	38.1
0.066	131	131	131	U	U	U/A	U/A	-2.298	-0.2918	106.2	39.4	-504.1	-526.0	101.8	38.1	-504.1	-526.0	101.8	38.1
0.067	131	131	131	U	U	U/A	U/A	-2.299	-0.2948	107.7	40.5	-49.6	-50.7	107.7	38.1	-49.6	-50.7	107.7	38.1
0.068	131	131	131	U	U	U/A	U/A	-2.299	-0.2958	101.8	39.4	-43.6	-44.7	102.1	38.1	-43.6	-44.7	102.1	38.1
0.069	131	131	131	U	U	U/A	U/A	-2.299	-0.2965	101.8	39.4	-39.6	-40.7	101.8	38.1	-39.6	-40.7	101.8	38.1
0.070	131	131	131	U	U	U/A	U/A	-2.299	-0.2974	101.8	39.4	-35.6	-36.7	101.8	38.1	-35.6	-36.7	101.8	38.1
0.071	131	131	131	U	U	U/A	U/A	-2.299	-0.2984	101.8	39.4	-31.6	-32.7	101.8	38.1	-31.6	-32.7	101.8	38.1
0.072	131	131	131	U	U	U/A	U/A	-2.299	-0.2994	101.8	39.4	-27.6	-28.7	101.8	38.1	-27.6	-28.7	101.8	38.1
0.073	131	131	131	U	U	U/A	U/A	-2.299	-0.2995	101.8	39.4	-23.6	-24.7	101.8	38.1	-23.6	-24.7	101.8	38.1
0.074	131	131	131	U	U	U/A	U/A	-2.299	-0.2996	101.8	39.4	-19.6	-20.7	101.8	38.1	-19.6	-20.7	101.8	38.1
0.075	131	131	131	U	U	U/A	U/A	-2.299	-0.2997	101.8	39.4	-15.6	-16.7	101.8	38.1	-15.6	-16.7	101.8	38.1
0.076	131	131	131	U	U	U/A	U/A	-2.299	-0.2998	101.8	39.4	-11.6	-12.7	101.8	38.1	-11.6	-12.7	101.8	38.1
0.077	131	131	131	U	U	U/A	U/A	-2.299	-0.2999	101.8	39.4	-7.6	-8.7	101.8	38.1	-7.6	-8.7	101.8	38.1
0.078	131	131	131	U	U	U/A	U/A	-2.299	-0.3000	101.8	39.4	-3.6	-4.7	101.8	38.1	-3.6	-4.7	101.8	38.1
0.079	131	131	131	U	U	U/A	U/A	-2.299	-0.3001	101.8	39.4	-0.6	-1.7	101.8	38.1	-0.6	-1.7	101.8	38.1
0.080	131	131	131	U	U	U/A	U/A	-2.299	-0.3002	101.8	39.4	3.6	4.7	101.8	38.1	3.6	4.7	101.8	38.1
0.081	131	131	131	U	U	U/A	U/A	-2.299	-0.3003	101.8	39.4	7.6	8.7	101.8	38.1	7.6	8.7	101.8	38.1
0.082	131	131	131	U	U	U/A	U/A	-2.299	-0.3004	101.8	39.4	11.6	12.7	101.8	38.1	11.6	12.7	101.8	38.1
0.083	131	131	131	U	U	U/A	U/A	-2.299	-0.3005	101.8	39.4	15.6	16.7	101.8	38.1	15.6	16.7	101.8	38.1
0.084	131	131	131	U	U	U/A	U/A	-2.299	-0.3006	101.8	39.4	19.6	20.7	101.8	38.1	19.6	20.7	101.8	38.1
0.085	131	131	131	U	U	U/A	U/A	-2.299	-0.3007	101.8	39.4	23.6	24.7	101.8	38.1	23.6	24.7	101.8	38.1
0.086	131	131	131	U	U	U/A	U/A	-2.299	-0.3008	101.8	39.4	27.6	28.7	101.8	38.1	27.6	28.7	101.8	38.1
0.087	131	131	131	U	U	U/A	U/A	-2.299	-0.3009	101.8	39.4	31.6	32.7	101.8	38.1	31.6	32.7	101.8	38.1
0.088	131	131	131	U	U	U/A	U/A	-2.299	-0.3010	101.8	39.4	35.6	36.7	101.8	38.1	35.6	36.7	101.8	38.1
0.089	131	131	131	U	U	U/A	U/A	-2.299	-0.3011	101.8	39.4	39.6	40.7	101.8	38.1	39.6	40.7	101.8	38.1
0.090	131	131	131	U	U	U/A	U/A	-2.299	-0.3012	101.8	39.4	43.6	44.7	101.8	38.1	43.6	44.7	101.8	38.1
0.091	131	131	131	U	U	U/A	U/A	-2.299	-0.3013	101.8	39.4	47.6	48.7	101.8	38.1	47.6	48.7	101.8	38.1
0.092	131	131	131	U	U	U/A	U/A	-2.299	-0.3014	101.8	39.4	51.6	52.7	101.8	38.1	51.6	52.7	101.8	38.1
0.093	131	131	131	U	U	U/A	U/A	-2.299	-0.3015	101.8	39.4	55.6	56.7	101.8	38.1	55.6	56.7	101.8	38.1
0.094	131	131	131	U	U	U/A	U/A	-2.299	-0.3016	101.8	39.4	59.6	60.7	101.8	38.1	59.6	60.7	101.8	38.1
0.095	131	131	131	U	U	U/A	U/A	-2.299	-0.3017	101.8	39.4	63.6	64.7	101.8	38.1	63.6	64.7	101.8	38.1
0.096	131	131	131	U	U	U/A	U/A	-2.299	-0.3018	101.8	39.4	67.6	68.7	101.8	38.1	67.6	68.7	101.8	38.1
0.097	131	131	131	U	U	U/A	U/A	-2.299	-0.3019	101.8	39.4	71.6	72.7	101.8	38.1	71.6	72.7	101.8	38.1
0.098	131	131	131	U	U	U/A	U/A	-2.299	-0.3020	101.8	39.4	75.6	76.7	101.8	38.1	75.6	76.7	101.8	38.1
0.099	131	131	131	U	U	U/A	U/A	-2.299	-0.3021	101.8	39.4	79.6	80.7	101.8	38.1	79.6	80.7	101.8	38.1
0.100	131	131	131	U	U	U/A	U/A	-2.299	-0.3022	101.8	39.4	83.6	84.7	101.8	38.1	83.6	84.7	101.8	38.1

NSWC MP 82-430

FILE NO.=17	X/D=5.25	X/D=5.25	ALPHA=0	BETA=0	U/U'
RUN#=82052002	27	27	U-A	USD	-8279.1
NO. OF POINTS=			U-A	USD	-7740.4
Y	137	137	U-A	USD	-6988.1
Y	0.028	0.035	U-A	USD	-6687.7
Y	0.025	0.032	U-A	USD	-6250.8
Y	0.030	0.037	U-A	USD	-6015.8
Y	0.035	0.042	U-A	USD	-5655.1
Y	0.040	0.048	U-A	USD	-4631.7
Y	0.045	0.055	U-A	USD	-4246.6
Y	0.050	0.062	U-A	USD	-3842.1
Y	0.055	0.069	U-A	USD	-3699.0
Y	0.060	0.076	U-A	USD	-3217.7
Y	0.065	0.083	U-A	USD	-3169.7
Y	0.070	0.090	U-A	USD	-3203.0
Y	0.075	0.097	U-A	USD	-2649.3
Y	0.080	0.104	U-A	USD	-3105.0
Y	0.085	0.111	U-A	USD	-2048.6
Y	0.090	0.118	U-A	USD	-1526.4
Y	0.095	0.125	U-A	USD	-914.7
Y	0.100	0.132	U-A	USD	-417.1
Y	0.105	0.139	U-A	USD	-261.7
Y	0.110	0.146	U-A	USD	-289.1
Y	0.115	0.153	U-A	USD	-97.7
Y	0.120	0.160	U-A	USD	-145.2
Y	0.125	0.167	U-A	USD	-35.9
Y	0.130	0.174	U-A	USD	
Y	0.135	0.181	U-A	USD	
Y	0.140	0.188	U-A	USD	
Y	0.145	0.195	U-A	USD	
Y	0.150	0.202	U-A	USD	
Y	0.155	0.209	U-A	USD	
Y	0.160	0.216	U-A	USD	
Y	0.165	0.223	U-A	USD	
Y	0.170	0.230	U-A	USD	
Y	0.175	0.237	U-A	USD	
Y	0.180	0.244	U-A	USD	
Y	0.185	0.251	U-A	USD	
Y	0.190	0.258	U-A	USD	
Y	0.195	0.265	U-A	USD	
Y	0.200	0.272	U-A	USD	
Y	0.205	0.279	U-A	USD	
Y	0.210	0.286	U-A	USD	
Y	0.215	0.293	U-A	USD	
Y	0.220	0.300	U-A	USD	
Y	0.225	0.307	U-A	USD	
Y	0.230	0.314	U-A	USD	
Y	0.235	0.321	U-A	USD	
Y	0.240	0.328	U-A	USD	
Y	0.245	0.335	U-A	USD	
Y	0.250	0.342	U-A	USD	
Y	0.255	0.349	U-A	USD	
Y	0.260	0.356	U-A	USD	
Y	0.265	0.363	U-A	USD	
Y	0.270	0.370	U-A	USD	
Y	0.275	0.377	U-A	USD	
Y	0.280	0.384	U-A	USD	
Y	0.285	0.391	U-A	USD	
Y	0.290	0.398	U-A	USD	
Y	0.295	0.405	U-A	USD	
Y	0.300	0.412	U-A	USD	
Y	0.305	0.419	U-A	USD	
Y	0.310	0.426	U-A	USD	
Y	0.315	0.433	U-A	USD	
Y	0.320	0.440	U-A	USD	
Y	0.325	0.447	U-A	USD	
Y	0.330	0.454	U-A	USD	
Y	0.335	0.461	U-A	USD	
Y	0.340	0.468	U-A	USD	
Y	0.345	0.475	U-A	USD	
Y	0.350	0.482	U-A	USD	
Y	0.355	0.489	U-A	USD	
Y	0.360	0.496	U-A	USD	
Y	0.365	0.503	U-A	USD	
Y	0.370	0.510	U-A	USD	
Y	0.375	0.517	U-A	USD	
Y	0.380	0.524	U-A	USD	
Y	0.385	0.531	U-A	USD	
Y	0.390	0.538	U-A	USD	
Y	0.395	0.545	U-A	USD	
Y	0.400	0.552	U-A	USD	
Y	0.405	0.559	U-A	USD	
Y	0.410	0.566	U-A	USD	
Y	0.415	0.573	U-A	USD	
Y	0.420	0.580	U-A	USD	
Y	0.425	0.587	U-A	USD	
Y	0.430	0.594	U-A	USD	
Y	0.435	0.601	U-A	USD	
Y	0.440	0.608	U-A	USD	
Y	0.445	0.615	U-A	USD	
Y	0.450	0.622	U-A	USD	
Y	0.455	0.629	U-A	USD	
Y	0.460	0.636	U-A	USD	
Y	0.465	0.643	U-A	USD	
Y	0.470	0.650	U-A	USD	
Y	0.475	0.657	U-A	USD	
Y	0.480	0.664	U-A	USD	
Y	0.485	0.671	U-A	USD	
Y	0.490	0.678	U-A	USD	
Y	0.495	0.685	U-A	USD	
Y	0.500	0.692	U-A	USD	
Y	0.505	0.699	U-A	USD	
Y	0.510	0.706	U-A	USD	
Y	0.515	0.713	U-A	USD	
Y	0.520	0.720	U-A	USD	
Y	0.525	0.727	U-A	USD	
Y	0.530	0.734	U-A	USD	
Y	0.535	0.741	U-A	USD	
Y	0.540	0.748	U-A	USD	
Y	0.545	0.755	U-A	USD	
Y	0.550	0.762	U-A	USD	
Y	0.555	0.769	U-A	USD	
Y	0.560	0.776	U-A	USD	
Y	0.565	0.783	U-A	USD	
Y	0.570	0.790	U-A	USD	
Y	0.575	0.797	U-A	USD	
Y	0.580	0.804	U-A	USD	
Y	0.585	0.811	U-A	USD	
Y	0.590	0.818	U-A	USD	
Y	0.595	0.825	U-A	USD	
Y	0.600	0.832	U-A	USD	
Y	0.605	0.839	U-A	USD	
Y	0.610	0.846	U-A	USD	
Y	0.615	0.853	U-A	USD	
Y	0.620	0.860	U-A	USD	
Y	0.625	0.867	U-A	USD	
Y	0.630	0.874	U-A	USD	
Y	0.635	0.881	U-A	USD	
Y	0.640	0.888	U-A	USD	
Y	0.645	0.895	U-A	USD	
Y	0.650	0.902	U-A	USD	
Y	0.655	0.909	U-A	USD	
Y	0.660	0.916	U-A	USD	
Y	0.665	0.923	U-A	USD	
Y	0.670	0.930	U-A	USD	
Y	0.675	0.937	U-A	USD	
Y	0.680	0.944	U-A	USD	
Y	0.685	0.951	U-A	USD	
Y	0.690	0.958	U-A	USD	
Y	0.695	0.965	U-A	USD	
Y	0.700	0.972	U-A	USD	
Y	0.705	0.979	U-A	USD	
Y	0.710	0.986	U-A	USD	
Y	0.715	0.993	U-A	USD	
Y	0.720	0.999	U-A	USD	
Y	0.725	0.999	U-A	USD	
Y	0.730	0.999	U-A	USD	
Y	0.735	0.999	U-A	USD	
Y	0.740	0.999	U-A	USD	
Y	0.745	0.999	U-A	USD	
Y	0.750	0.999	U-A	USD	
Y	0.755	0.999	U-A	USD	
Y	0.760	0.999	U-A	USD	
Y	0.765	0.999	U-A	USD	
Y	0.770	0.999	U-A	USD	
Y	0.775	0.999	U-A	USD	
Y	0.780	0.999	U-A	USD	
Y	0.785	0.999	U-A	USD	
Y	0.790	0.999	U-A	USD	
Y	0.795	0.999	U-A	USD	
Y	0.800	0.999	U-A	USD	
Y	0.805	0.999	U-A	USD	
Y	0.810	0.999	U-A	USD	
Y	0.815	0.999	U-A	USD	
Y	0.820	0.999	U-A	USD	
Y	0.825	0.999	U-A	USD	
Y	0.830	0.999	U-A	USD	
Y	0.835	0.999	U-A	USD	
Y	0.840	0.999	U-A	USD	
Y	0.845	0.999	U-A	USD	
Y	0.850	0.999	U-A	USD	
Y	0.855	0.999	U-A	USD	
Y	0.860	0.999	U-A	USD	
Y	0.865	0.999	U-A	USD	
Y	0.870	0.999	U-A	USD	
Y	0.875	0.999	U-A	USD	
Y	0.880	0.999	U-A	USD	
Y	0.885	0.999	U-A	USD	
Y	0.890	0.999	U-A	USD	
Y	0.895	0.999	U-A	USD	
Y	0.900	0.999	U-A	USD	
Y	0.905	0.999	U-A	USD	
Y	0.910	0.999	U-A	USD	
Y	0.915	0.999	U-A	USD	
Y	0.920	0.999	U-A	USD	
Y	0.925	0.999	U-A	USD	
Y	0.930	0.999	U-A	USD	
Y	0.935	0.999	U-A	USD	
Y	0.940	0.999	U-A	USD	
Y	0.945	0.999	U-A	USD	
Y	0.950	0.999	U-A	USD	
Y	0.955	0.999	U-A	USD	
Y	0.960	0.999	U-A	USD	
Y	0.965	0.999	U-A	USD	
Y	0.970	0.999	U-A	USD	
Y	0.975	0.999	U-A	USD	
Y	0.980	0.999	U-A	USD	
Y	0.985	0.999	U-A	USD	
Y	0.990	0.999	U-A	USD	
Y	0.995	0.999	U-A	USD	
Y	0.999	0.999	U-A	USD	
Y	1.000	0.999	U-A	USD	
Y	1.001	0.999	U-A	USD	
Y	1.002	0.999	U-A	USD	
Y	1.003	0.999	U-A	USD	
Y	1.004	0.999	U-A	USD	
Y	1.005	0.999	U-A	USD	
Y	1.006	0.999	U-A	USD	
Y	1.007	0.999	U-A	USD	
Y	1.008	0.999	U-A	USD	
Y	1.009	0.999	U-A	USD	
Y	1.010	0.999	U-A	USD	
Y	1.011	0.999	U-A	USD	
Y	1.012	0.999	U-A	USD	
Y	1.013	0.999	U-A	USD	
Y	1.014	0.999	U-A	USD	
Y	1.015	0.999	U-A	USD	
Y	1.016	0.999	U-A	USD	
Y	1.017	0.999	U-A	USD	
Y	1.018	0.999	U-A	USD	
Y	1.019	0.999	U-A	USD	
Y	1.020	0.999	U-A	USD	
Y	1.021	0.999	U-A	USD	
Y	1.022	0.999	U-A	USD	
Y	1.023	0.999	U-A	USD	
Y	1.024	0.999	U-A	USD	
Y	1.025	0.999	U-A	USD	
Y	1.026	0.999	U-A	USD	
Y	1.027	0.999	U-A	USD	
Y	1.028	0.999	U-A	USD	
Y	1.029</td				

FILE NO. = 18
RUN # = 82052004
NO. OF POINTS = 26

BETA=0

X/D = 4.39

	T0	U	U/A	USD	USD	U/U	
0.025	1.39	1249.9	1.748	219.0	57.3	-540.5	
0.030	1.40	1256.4	1.757	210.3	63.3	-1063.7	
0.035	1.40	1284.0	1.796	223.5	65.0	-1157.9	
0.040	1.40	1318.2	1.844	226.5	62.6	-1862.1	
0.045	1.40	1339.3	1.873	231.4	63.4	-1298.5	
0.050	1.40	1367.9	1.913	231.4	62.4	-1352.6	
0.055	1.40	1414.6	1.978	223.5	62.4	-1878.7	
0.060	1.40	1438.6	2.012	225.5	62.4	-652.6	
0.065	1.40	1472.6	2.060	219.1	51.9	-548.8	
0.070	1.41	1497.8	2.124	219.1	51.9	-185.7	
0.075	1.41	1526.7	2.177	217.3	51.9	472.6	
0.080	1.41	1556.7	2.225	217.3	51.9	428.6	
0.085	1.41	1583.4	2.275	217.3	51.9	524.6	
0.090	1.41	1608.7	2.325	217.3	51.9	886.8	
0.095	1.41	1643.9	2.375	217.3	51.9	563.6	
0.100	1.41	1673.9	2.425	217.3	51.9	686.7	
0.110	1.41	1745.0	2.475	217.3	51.9	79.7	
0.120	1.41	1823.2	2.525	217.3	51.9	-136.1	
0.130	1.41	1920.1	2.575	217.3	51.9	-114.1	
0.140	1.41	2004.8	2.625	217.3	51.9	-126.4	
0.150	1.42	2056.2	2.675	217.3	51.9	-124.1	
0.160	1.42	2076.1	2.725	217.3	51.9	-142.1	
0.170	1.42	2092.1	2.775	217.3	51.9		
0.180	1.42	2105.8	2.825	217.3	51.9		
0.190	1.42	2121.8	2.875	217.3	51.9		
0.200	1.42	2121.8	2.925	217.3	51.9		

FILE NO.=19 RUN#=82052006 NO. OF POINTS=	X/D=4.7 24	ALPHA=2	BETA=6
Y	TG	U	U/A
Y/U'		USD	USD
0. 959	129	-230. 0	-0. 3219
0. 955	146	-228. 7	-0. 3229
0. 960	141	-226. 0	-0. 3197
0. 965	141	-224. 1	-0. 3159
0. 970	141	-221. 4	-0. 3132
0. 966	142	-216. 7	-0. 3132
0. 967	142	-213. 0	-0. 3132
0. 968	142	-205. 7	-0. 3132
0. 969	142	-199. 4	-0. 3132
0. 970	142	-194. 7	-0. 3132
0. 965	142	-179. 0	-0. 3132
0. 966	142	-164. 3	-0. 3132
0. 967	142	-148. 0	-0. 3132
0. 968	142	-138. 0	-0. 3132
0. 969	142	-111. 0	-0. 3132
0. 970	142	-96. 0	-0. 3132
0. 959	146	-78. 0	-0. 3132
0. 960	141	-59. 0	-0. 3132
0. 965	141	-41. 0	-0. 3132
0. 966	141	-27. 0	-0. 3132
0. 967	141	-13. 0	-0. 3132
0. 968	141	1. 0	-0. 3132
0. 969	141	14. 0	-0. 3132
0. 970	141	28. 0	-0. 3132
0. 959	146	46. 0	-0. 3132
0. 960	141	54. 0	-0. 3132
0. 965	141	62. 0	-0. 3132
0. 966	141	70. 0	-0. 3132
0. 967	141	78. 0	-0. 3132
0. 968	141	86. 0	-0. 3132
0. 969	141	94. 0	-0. 3132
0. 970	141	102. 0	-0. 3132
0. 959	146	110. 0	-0. 3132
0. 960	141	118. 0	-0. 3132
0. 965	141	126. 0	-0. 3132
0. 966	141	134. 0	-0. 3132
0. 967	141	142. 0	-0. 3132
0. 968	141	150. 0	-0. 3132
0. 969	141	158. 0	-0. 3132
0. 970	141	166. 0	-0. 3132
0. 959	146	174. 0	-0. 3132
0. 960	141	182. 0	-0. 3132
0. 965	141	190. 0	-0. 3132
0. 966	141	198. 0	-0. 3132
0. 967	141	206. 0	-0. 3132
0. 968	141	214. 0	-0. 3132
0. 969	141	222. 0	-0. 3132
0. 970	141	230. 0	-0. 3132

FILE NO. = 23
RUN# = 82052307
NO. OF POINTS =

X/D = 5.25
28

ALPHA=2
BETA=0

	U	U-A	U/A	USD	USD	U/U'
1	1.790	-0.0368	205.9	65.0	-6910.	-6207.
2	1.944	-0.0472	187.6	64.7	-5688.	-5476.
3	1.987	-0.0482	172.2	66.9	-5682.	-5446.
4	2.022	-0.0498	168.5	68.5	-5283.	-4735.
5	2.064	-0.0459	161.9	69.6	-3896.	-3864.
6	2.099	-0.0465	156.1	69.5	-3898.	-3896.
7	2.130	-0.0468	152.3	69.6	-4898.	-4572.
8	2.160	-0.0480	145.8	69.7	-3864.	-3524.
9	2.194	-0.0465	142.8	69.7	-3794.	-3176.
10	2.222	-0.0416	137.6	68.7	-3791.	-3794.
11	2.252	-0.0416	132.9	67.7	-3791.	-3794.
12	2.278	-0.0399	127.6	67.7	-3791.	-3794.
13	2.296	-0.0399	122.9	67.7	-3791.	-3794.
14	2.306	-0.0399	122.9	67.7	-3791.	-3794.
15	2.312	-0.0399	122.9	67.7	-3791.	-3794.
16	2.312	-0.0399	122.9	67.7	-3791.	-3794.
17	2.312	-0.0399	122.9	67.7	-3791.	-3794.
18	2.312	-0.0399	122.9	67.7	-3791.	-3794.
19	2.312	-0.0399	122.9	67.7	-3791.	-3794.
20	2.312	-0.0399	122.9	67.7	-3791.	-3794.
21	2.312	-0.0399	122.9	67.7	-3791.	-3794.
22	2.312	-0.0399	122.9	67.7	-3791.	-3794.
23	2.312	-0.0399	122.9	67.7	-3791.	-3794.
24	2.312	-0.0399	122.9	67.7	-3791.	-3794.
25	2.312	-0.0399	122.9	67.7	-3791.	-3794.
26	2.312	-0.0399	122.9	67.7	-3791.	-3794.
27	2.312	-0.0399	122.9	67.7	-3791.	-3794.
28	2.312	-0.0399	122.9	67.7	-3791.	-3794.

FILE NO. = 21
RUN# = 92052008
NO. OF POINTS =

X/D = 4.39
23

ALPHA = -2

BETA = 0

	Y	T0	U	V/A	USD	USD	U/V	U/V
0.025	140	140	43.5	0.0610	59.1	-715.3	-601.8	-1477.0
0.030	140	141	49.8	0.0510	63.5	-62.2	-1124.2	-1180.4
0.035	141	141	60.3	0.0697	61.3	-1517.6	-1198.2	-1791.7
0.040	141	141	66.5	0.0843	59.1	-1618.0	-1327.0	-1327.0
0.045	141	141	71.4	0.0931	57.0	-1124.9	-1124.9	-1124.9
0.050	141	141	71.4	0.0993	54.1	-1517.6	-1517.6	-1517.6
0.055	141	141	71.4	0.0997	52.3	-1198.2	-1198.2	-1198.2
0.060	141	141	71.4	0.0997	50.0	-1180.4	-1180.4	-1180.4
0.065	141	141	71.4	0.0997	48.0	-1517.6	-1517.6	-1517.6
0.070	141	141	71.4	0.0997	49.6	-1618.0	-1618.0	-1618.0
0.075	141	141	71.4	0.0997	51.0	-1198.2	-1198.2	-1198.2
0.080	141	141	71.4	0.0997	54.1	-1517.6	-1517.6	-1517.6
0.085	141	141	71.4	0.0997	52.3	-1198.2	-1198.2	-1198.2
0.090	141	141	71.4	0.0997	50.0	-1517.6	-1517.6	-1517.6
0.095	141	141	71.4	0.0997	48.0	-1618.0	-1618.0	-1618.0
0.100	141	141	71.4	0.0997	49.6	-1198.2	-1198.2	-1198.2
0.105	141	141	71.4	0.0997	51.0	-1517.6	-1517.6	-1517.6
0.110	141	141	71.4	0.0997	54.1	-1618.0	-1618.0	-1618.0
0.115	141	141	71.4	0.0997	52.3	-1198.2	-1198.2	-1198.2
0.120	141	141	71.4	0.0997	50.0	-1517.6	-1517.6	-1517.6
0.125	141	141	71.4	0.0997	48.0	-1618.0	-1618.0	-1618.0
0.130	141	141	71.4	0.0997	49.6	-1198.2	-1198.2	-1198.2
0.135	141	141	71.4	0.0997	51.0	-1517.6	-1517.6	-1517.6
0.140	141	141	71.4	0.0997	54.1	-1618.0	-1618.0	-1618.0
0.145	141	141	71.4	0.0997	52.3	-1198.2	-1198.2	-1198.2
0.150	141	141	71.4	0.0997	50.0	-1517.6	-1517.6	-1517.6
0.155	141	141	71.4	0.0997	48.0	-1618.0	-1618.0	-1618.0
0.160	141	141	71.4	0.0997	49.6	-1198.2	-1198.2	-1198.2
0.165	141	141	71.4	0.0997	51.0	-1517.6	-1517.6	-1517.6
0.170	141	141	71.4	0.0997	54.1	-1618.0	-1618.0	-1618.0

FILE NC.=22
RUN#=92052010
NO. OF POINTS=

X/0=4.7
21

ALPHA=-2

BETA=0

Y	T0	U	U/A	U/A	USD	USD	U/U'
0. 050	139	1638.5	-245.8	-0. 3438	106.3	44.8	-1523.4
0. 055	140	1658.4	-247.2	-0. 3458	108.8	43.8	-1841.1
0. 060	140	1673.0	-247.6	-0. 3462	101.8	44.3	-1560.1
0. 065	140	1688.3	-248.0	-0. 3481	99.1	46.8	-1394.2
0. 070	141	1702.4	-248.3	-0. 3450	100.1	44.3	-1560.1
0. 075	141	1713.3	-248.7	-0. 3488	102.1	45.9	-1217.9
0. 080	141	1725.4	-249.1	-0. 3246	102.1	47.6	-1463.2
0. 085	141	1734.2	-249.3	-0. 3271	102.1	49.5	-1423.7
0. 090	141	1742.1	-249.7	-0. 3217	102.1	50.7	-1556.1
0. 095	141	1754.0	-249.9	-0. 3279	102.1	54.8	-1423.7
0. 100	142	1765.9	-250.1	-0. 3257	102.1	56.5	-1556.1
0. 110	142	1782.8	-250.4	-0. 3255	102.1	55.1	-1923.2
0. 120	142	1797.8	-250.7	-0. 3255	102.1	55.7	-1966.6
0. 130	142	1812.6	-251.0	-0. 3255	102.1	56.3	-1996.9
0. 140	142	1826.5	-251.3	-0. 3255	102.1	57.1	-1399.6
0. 150	142	1836.5	-251.6	-0. 3255	102.1	57.7	-1366.6
0. 160	142	1845.5	-251.9	-0. 3255	102.1	58.5	-1996.9
0. 170	142	1853.5	-252.2	-0. 3255	102.1	59.2	-1399.6
0. 180	142	1860.5	-252.5	-0. 3255	102.1	59.8	-1366.6
0. 190	142	1866.5	-252.8	-0. 3255	102.1	60.5	-1996.9
0. 200	142	1871.5	-253.1	-0. 3255	102.1	61.2	-1399.6

NSWC MP 82-430

FILE NO.=23	RUN#=82052012	X,D=5.25	ALPHA=-2	BETA=0
NO. OF POINTS=	26	U	U/A	USD
0.030	138	1410.7	-0.0378	265.5
0.035	139	1516.1	-0.0586	203.2
0.040	139	1554.8	-0.0558	198.7
0.045	139	1592.9	-0.0589	179.8
0.050	139	1629.5	-0.0603	160.2
0.055	139	1658.7	-0.0626	156.9
0.060	139	1680.7	-0.0629	152.1
0.065	139	1714.9	-0.0631	152.1
0.070	139	1744.1	-0.0640	148.7
0.075	139	1766.1	-0.0648	152.1
0.080	139	1797.9	-0.0656	148.7
0.085	139	1828.5	-0.0665	146.1
0.090	139	1863.5	-0.0671	146.1
0.095	139	1893.5	-0.0681	133.3
0.100	139	1927.4	-0.0692	133.3
0.105	139	1957.2	-0.0693	133.3
0.110	139	1986.6	-0.0693	133.3
0.115	139	2016.1	-0.0693	133.3
0.120	139	2045.4	-0.0693	133.3
0.125	139	2074.9	-0.0693	133.3
0.130	139	2104.4	-0.0693	133.3
0.135	139	2133.9	-0.0693	133.3
0.140	139	2163.4	-0.0693	133.3
0.145	139	2192.9	-0.0693	133.3
0.150	139	2222.4	-0.0693	133.3
0.155	139	2251.9	-0.0693	133.3
0.160	139	2281.4	-0.0693	133.3
0.165	139	2310.9	-0.0693	133.3
0.170	139	2339.4	-0.0693	133.3
0.175	139	2368.9	-0.0693	133.3
0.180	139	2407.4	-0.0693	133.3
0.185	139	2436.9	-0.0693	133.3
0.190	139	2466.4	-0.0693	133.3
0.195	139	2505.9	-0.0693	133.3
0.200	139	2535.4	-0.0693	133.3
0.205	139	2564.9	-0.0693	133.3
0.210	139	2594.4	-0.0693	133.3
0.215	139	2623.9	-0.0693	133.3
0.220	139	2653.4	-0.0693	133.3
0.225	139	2682.9	-0.0693	133.3
0.230	139	2712.4	-0.0693	133.3
0.235	139	2741.9	-0.0693	133.3
0.240	139	2771.4	-0.0693	133.3
0.245	139	2800.9	-0.0693	133.3
0.250	139	2829.4	-0.0693	133.3
0.255	139	2858.9	-0.0693	133.3
0.260	139	2888.4	-0.0693	133.3
0.265	139	2917.9	-0.0693	133.3
0.270	139	2947.4	-0.0693	133.3
0.275	139	2976.9	-0.0693	133.3
0.280	139	3006.4	-0.0693	133.3
0.285	139	3035.9	-0.0693	133.3
0.290	139	3065.4	-0.0693	133.3
0.295	139	3094.9	-0.0693	133.3
0.300	139	3124.4	-0.0693	133.3
0.305	139	3153.9	-0.0693	133.3
0.310	139	3183.4	-0.0693	133.3
0.315	139	3212.9	-0.0693	133.3
0.320	139	3242.4	-0.0693	133.3
0.325	139	3271.9	-0.0693	133.3
0.330	139	3301.4	-0.0693	133.3
0.335	139	3330.9	-0.0693	133.3
0.340	139	3359.4	-0.0693	133.3
0.345	139	3388.9	-0.0693	133.3
0.350	139	3417.4	-0.0693	133.3
0.355	139	3446.9	-0.0693	133.3
0.360	139	3475.4	-0.0693	133.3
0.365	139	3504.9	-0.0693	133.3
0.370	139	3533.4	-0.0693	133.3
0.375	139	3562.9	-0.0693	133.3
0.380	139	3591.4	-0.0693	133.3
0.385	139	3620.9	-0.0693	133.3
0.390	139	3649.4	-0.0693	133.3
0.395	139	3678.9	-0.0693	133.3
0.400	139	3707.4	-0.0693	133.3
0.405	139	3736.9	-0.0693	133.3
0.410	139	3765.4	-0.0693	133.3
0.415	139	3794.9	-0.0693	133.3
0.420	139	3823.4	-0.0693	133.3
0.425	139	3852.9	-0.0693	133.3
0.430	139	3881.4	-0.0693	133.3
0.435	139	3910.9	-0.0693	133.3
0.440	139	3939.4	-0.0693	133.3
0.445	139	3968.9	-0.0693	133.3
0.450	139	3997.4	-0.0693	133.3
0.455	139	4026.9	-0.0693	133.3
0.460	139	4055.4	-0.0693	133.3
0.465	139	4084.9	-0.0693	133.3
0.470	139	4113.4	-0.0693	133.3
0.475	139	4142.9	-0.0693	133.3
0.480	139	4171.4	-0.0693	133.3
0.485	139	4200.9	-0.0693	133.3
0.490	139	4229.4	-0.0693	133.3
0.495	139	4258.9	-0.0693	133.3
0.500	139	4287.4	-0.0693	133.3
0.505	139	4316.9	-0.0693	133.3
0.510	139	4345.4	-0.0693	133.3
0.515	139	4374.9	-0.0693	133.3
0.520	139	4403.4	-0.0693	133.3
0.525	139	4432.9	-0.0693	133.3
0.530	139	4461.4	-0.0693	133.3
0.535	139	4490.9	-0.0693	133.3
0.540	139	4519.4	-0.0693	133.3
0.545	139	4548.9	-0.0693	133.3
0.550	139	4577.4	-0.0693	133.3
0.555	139	4606.9	-0.0693	133.3
0.560	139	4635.4	-0.0693	133.3
0.565	139	4664.9	-0.0693	133.3
0.570	139	4693.4	-0.0693	133.3
0.575	139	4722.9	-0.0693	133.3
0.580	139	4751.4	-0.0693	133.3
0.585	139	4780.9	-0.0693	133.3
0.590	139	4809.4	-0.0693	133.3
0.595	139	4838.9	-0.0693	133.3
0.600	139	4867.4	-0.0693	133.3
0.605	139	4896.9	-0.0693	133.3
0.610	139	4925.4	-0.0693	133.3
0.615	139	4954.9	-0.0693	133.3
0.620	139	4983.4	-0.0693	133.3
0.625	139	5012.9	-0.0693	133.3
0.630	139	5041.4	-0.0693	133.3
0.635	139	5070.9	-0.0693	133.3
0.640	139	5109.4	-0.0693	133.3
0.645	139	5138.9	-0.0693	133.3
0.650	139	5167.4	-0.0693	133.3
0.655	139	5196.9	-0.0693	133.3
0.660	139	5225.4	-0.0693	133.3
0.665	139	5254.9	-0.0693	133.3
0.670	139	5283.4	-0.0693	133.3
0.675	139	5312.9	-0.0693	133.3
0.680	139	5341.4	-0.0693	133.3
0.685	139	5370.9	-0.0693	133.3
0.690	139	5409.4	-0.0693	133.3
0.695	139	5438.9	-0.0693	133.3
0.700	139	5467.4	-0.0693	133.3
0.705	139	5500.0	-0.0693	133.3
0.710	139	5538.5	-0.0693	133.3
0.715	139	5577.0	-0.0693	133.3
0.720	139	5615.5	-0.0693	133.3
0.725	139	5654.0	-0.0693	133.3
0.730	139	5692.5	-0.0693	133.3
0.735	139	5731.0	-0.0693	133.3
0.740	139	5769.5	-0.0693	133.3
0.745	139	5808.0	-0.0693	133.3
0.750	139	5846.5	-0.0693	133.3
0.755	139	5885.0	-0.0693	133.3
0.760	139	5923.5	-0.0693	133.3
0.765	139	5962.0	-0.0693	133.3
0.770	139	6000.5	-0.0693	133.3
0.775	139	6039.0	-0.0693	133.3
0.780	139	6077.5	-0.0693	133.3
0.785	139	6116.0	-0.0693	133.3
0.790	139	6154.5	-0.0693	133.3
0.795	139	6193.0	-0.0693	133.3
0.800	139	6231.5	-0.0693	133.3
0.805	139	6269.0	-0.0693	133.3
0.810	139	6307.5	-0.0693	133.3
0.815	139	6346.0	-0.0693	133.3
0.820	139	6384.5	-0.0693	133.3
0.825	139	6423.0	-0.0693	133.3
0.830	139	6461.5	-0.0693	133.3
0.835	139	6500.0	-0.0693	133.3
0.840	139	6538.5	-0.0693	133.3
0.845	139	6577.0	-0.0693	133.3
0.850	139	6615.5	-0.0693	133.3
0.855	139	6654.0	-0.0693	133.3
0.860	139	6692.5	-0.0693	133.3
0.865	139	6731.0	-0.0693	133.3
0.870	139	6769.5	-0.0693	133.3
0.875	139	6808.0	-0.0693	133.3
0.880	139	6846.5	-0.0693	133.3
0.885	139	6885.0	-0.0693	133.3
0.890	139	6923.5	-0.0693	133.3
0.895	139	6962.0	-0.0693	133.3
0.900	139	7000.5	-0.0693	133.3
0.905	139	7039.0	-0.0693	133.3
0.910	139	7077.5	-0.0693	133.3
0.915	139	7116.0	-0.0693	133.3
0.920	139	7154.5	-0.0693	133.3
0.925	139	7193.0	-0.0693	133.3
0.930	139	7231.5	-0.0693	133.3
0.935	139	7269.0	-0.0693	133.3
0.940	139	7307.5	-0.0693	133.3
0.945	139	7346.0	-0.0693	133.3
0.950	139	7384.5	-0.0693	133.3
0.955	139	7423.0	-0.0693	133.3
0.960	139	7461.5	-0.0693	133.3
0.965	139	7500.0	-0.0693	133.3
0.970	139	7538.5	-0.0693	133.3
0.975	139	7577.0	-0.0693	133.3
0.980	139	7615.5	-0.0693	133.3
0.985	139	7654.0	-0.0693	133.3
0.990	139	7692.5	-0.0693	133.3
0.995	139	7731.0	-0.0693	133.3
1.000	139	7769.5	-0.0693	133.3
1.005	139	7808.0	-0.0693	133.3
1.010	139	7846.5	-0.0693	133.3
1.015	139	7885.0	-0.0693	133.3
1.020	139	7923.5	-0.0693	133.3
1.025	139	7962.0	-0.0693	133.3
1.030	139	8000.5	-0.0693	133.3
1.035	139	8039.0	-0.0693	133.3
1.040	139	8077.5	-0.0693	133.3
1.045	139	8116.0	-0.0693	133.3
1.050	139	8154.5	-0.0693	133.3
1.055	139	8193.0	-0.0693	133.3
1.060	139	8231.5	-0.0693	133.3
1.065	139	8269.0	-0.0693	133.3
1.070	139	8307.5	-0.0693	133.3
1.075	139	8346.0	-0.0693	133.3
1.080	139	8384.5	-0.0693	133.3
1.085	139	8423.0	-0.0693	133.3
1.090	139	8461.5	-0.0693	133.3
1.095	139	8500.0	-0.0693	133.3
1.100	139	8538.5	-0.0693	133.3
1.105	139	8577.0	-0.0693	133.3
1.110	139	8615.5	-0.0693	133.3
1.115	139	8654.0	-0.0693	133.3
1.120	139	8692.5	-0.0693	133.3
1.125	139	8731.0	-0.0693	133.3
1.130	139	8769.5	-0.0693	133.3
1.135	139	8808.0	-	

NSWC MP 82-430

FILE NO.=24
RUN# =82052013 FREESTREAM
NO. OF POINTS= 3

Y	T0	U	V	U/A	V/A	USD	USD	U'U'
0.200	138	2136.2	-4.3	2.995	-0.0060	19.1	31.7	20.3
0.200	138	2137.1	-5.1	2.997	-0.0071	20.1	31.4	30.0
0.200	138	2138.2	-5.1	2.998	-0.0072	21.3	31.6	36.4

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University of Delaware Attn: Prof. James Danberg School of Mechanical Engineering Newark, DE 19711	2	K24	10
		E431	9
		E432	3
		E35	1